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# Idaho Basin Outlook Report

## April 1, 1999

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### *How forecasts are made*

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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# **IDAHO WATER SUPPLY OUTLOOK REPORT**

*April 1, 1999*

## **SUMMARY**

March brought some relief to central Idaho with below normal precipitation and warm temperatures that started melting lower elevation snowpacks. The Panhandle Region received normal precipitation which further increased snow levels. Snowpacks are 110-160% of average north of the Snake River and 90% across southern Idaho. Lower elevation snowpacks are much less than in 1997; however, higher elevation snow sites are at record high levels in the northern Panhandle and west-central mountains. Streamflow forecasts call for 120-150% of average in the northern 2/3s of Idaho with the Weiser, North Fork Payette and northern Panhandle tributaries possibly yielding record high amounts. Reservoirs are being drafted in preparation for snowmelt runoff. Precipitation and air temperatures in the next 60 days will determine timing of the snowmelt season and severity of flooding.

## **SNOWPACK**

Record high snow water content levels are occurring at individual sites in the northern Panhandle Region (Smith Creek) and west-central mountains (Brundage Reservoir, Placer Creek and Squaw Flat). Snowpack percentages are 145-165% of average, which are at or near record high levels, in the Priest, Little Salmon, Mann, Weiser, North Fork Payette and Camas basins. Snowpack is 125-135% of average in the Coeur d'Alene, St. Joe, Clearwater, Payette and Boise basins. Snowpack is 110-125% of average in the Salmon, Wood, Lost, upper Snake and Owhyee basins. The snowpack is 90% of average in south central and south eastern Idaho.

## **PRECIPITATION**

March brought some relief with below normal precipitation falling across the southern 2/3s of Idaho. March precipitation was near normal in the Panhandle Region and decreased to 40% of average in the Wood and Lost basins. Precipitation was around 75% of average in the upper Snake River and Bear River basins, and 62% in the Southside Snake River basins. Precipitation for the water year is about 125% of average in the Panhandle, Clearwater, Weiser, Payette and Boise basins. Water year to date precipitation ranges from 105-115% of average in the Salmon, Wood and Lost, and upper Snake basins and is 85-95% in the Bear and Southside Snake River basins.

Spring precipitation (April-June) during other La Nina years varied and ranged from 50-150% of average. There is little or no correlation between La Nina type conditions and spring precipitation, unlike the good correlation with winter precipitation. **An unusually wet spring like Idaho had in the Boise basin in 1998 and in the upper Snake basin in 1997 could greatly increase runoff volumes, especially in areas with near record high snow.** The National Weather Service's extended climatic outlook for April is for warmer than normal temperatures across Idaho with below normal precipitation for the southern 2/3s of Idaho. For the 90 days from April 1 through June 30, chances are higher than normal for above normal temperatures across south-central, southern and western Idaho. Precipitation is expected to be below normal in the northern 1/3 of Idaho and normal across the southern 1/3 of the state.

Only the lower elevation snowpack has started to melt; mid-elevation and higher elevation sites were still accumulating snow water in early April. A warm dry spring would be ideal to melt this year's snowpack in an orderly manner. In contrast, a cool April would allow the snowpack to remain intact and melt later in the spring when the chance of having warm or hot temperatures are even greater. A late melt scenario typically improves the efficiency of the snowpack in producing streamflow and also increases the chance of having high peak flows and greater runoff volumes. Stay tuned and monitor April's weather closely, as it is a critical month in determining whether Idaho snowpack starts melting or continues accumulating.

## **RESERVOIRS**

Many Idaho reservoirs have been drafted in anticipation of the snow melt runoff season. The natural lakes and reservoirs in the Panhandle Region have near to above average storage. There will be plenty of water to fill the hundreds of lakes in the region. Dworshak Reservoir is near minimum pool at 45% of capacity. The Payette and Boise reservoir systems are being drafted and are just over half full. Magic and Little Wood reservoirs are also half full. Mackay was drafting slightly and is 70% full. The 8 major reservoirs in the upper Snake basin have a combined storage of 73% of capacity which is about normal for April 1. Oakley Reservoir is 65% full and may start releasing water as a result of the later than normal lower elevation snowmelt and to maintain adequate space when the higher elevation starts melting. Salmon Falls Reservoir is half full. Reservoir releases were reduced from Owyhee Reservoir after the late March runoff peak; Owyhee and Wildhorse reservoirs are about 90% full. Bear Lake and Montpelier reservoirs are about three-quarters full.

Note: NRCS reports reservoir information in terms of usable volumes, which includes both active, inactive, and in some cases dead storage. Other operators may report reservoir contents in different terms. For additional information, see the reservoir definitions in the back of this report.

## **STREAMFLOW**

Snow melt in some of the lower elevations generated increases in streams across the state. Other streams will be increasing as the snowpack ripens and starts melting. Streamflow forecasts call for high runoff volumes (135-150% of average) in the Weiser, Payette, Camas, Clearwater and Panhandle Region. Other streams north of Snake River are forecast at 100-130% of average. Streams across southern Idaho are forecast at 80-90% of average, except for Owyhee Reservoir inflow which is forecast at 150% of average.

## **RECREATION**

With average to record high snowpacks across the state, there will be plenty of water for recreation in Idaho this year. Deep snowpacks will extend the boating season in the northern 2/3 of Idaho. However, the above normal snow levels also bring the possibility of high peak flows. Boaters may have to wait until levels decrease to desirable boating levels. Caution should be used if putting on the river before, during, or immediately after the seasonal snowmelt peak -- additional rain during the critical snow melt period may generate rapid changes in streamflow levels. The Bruneau and Owyhee streams should have an adequate boating season. The Owyhee River peaked once last month, but there is still snow in the higher elevations to generate another peak. Warm temperatures in March allowed the snowpack to settle 1-2 feet in most areas. Snow depths remain deep in the higher elevations with up to 17 feet of snow in the Panhandle Region. Heavy snowpacks will take a long time to melt, maintaining above normal stream levels though at least mid-summer and delaying access into higher mountainous areas.

# IDAHO SURFACE WATER SUPPLY INDEX (SWSI)

As of April 1, 1999

The Surface Water Supply Index (SWSI) is predictive indicator of surface water availability within a watershed for the spring and summer water use season. The index is calculated by combining pre-runoff reservoir storage (carryover) with forecasts of spring and summer streamflow. SWSI values are scaled from +4.1 (abundant supply) to -4.1 (extremely dry), with a value of zero indicating a median water supply as compared to historical occurrences.

SWSI values are published January through May, and provide a more comprehensive outlook of water availability than either streamflow forecasts or reservoir storage figures alone. The SWSI index allows comparison of water availability between basins for drought or flood severity analysis. Threshold SWSI values have been established for most basins to indicate the potential for agricultural water shortages.

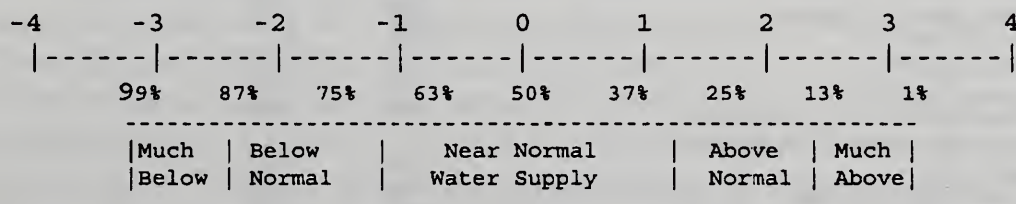
The following agencies and cooperators provide assistance in the preparation of the Surface Water Supply Index for Idaho:

US Department of Commerce, National Weather Service  
US Bureau of Reclamation  
Idaho Water Users Association

US Army Corps of Engineers  
Idaho Department of Water Resources  
PacifiCorp

| Basin or Region        | SWSI Value | Recent Year With Similar SWSI Value | Agricultural Water Supply Shortage May Occur When SWSI is Less Than |
|------------------------|------------|-------------------------------------|---------------------------------------------------------------------|
| PANHANDLE              | 3.3        | 1971                                | NA                                                                  |
| CLEARWATER             | 1.9        | 1996/93                             | NA                                                                  |
| SALMON                 | 2.6        | 1983                                | NA                                                                  |
| WEISER                 | 3.5        | 1982                                | NA                                                                  |
| PAYETTE                | 2.7        | 1995                                | NA                                                                  |
| BOISE                  | 1.3        | 1995                                | -2.6                                                                |
| BIG WOOD               | 1.5        | 1995                                | -1.4                                                                |
| LITTLE WOOD            | 1.6        | 1996                                | -2.1                                                                |
| BIG LOST               | 1.7        | 1980                                | -0.8                                                                |
| LITTLE LOST            | 1.3        | 1993                                | 0.0                                                                 |
| HENRYS FORK            | 1.5        | 1993                                | -3.3                                                                |
| SNAKE (AMERICAN FALLS) | 1.7        | 1995                                | -2.0                                                                |
| OAKLEY                 | 2.2        | 1985                                | 0.0                                                                 |
| SALMON FALLS           | 2.4        | 1996                                | 0.0                                                                 |
| BRUNEAU                | -1.3       | 1989                                | NA                                                                  |
| OWYHEE                 | 3.4        | 1983                                | NA                                                                  |
| BEAR RIVER             | -0.4       | 1997                                | -3.8                                                                |

## SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION



Note: The Percent Chance of Exceedance is an indicator of how often a range of SWSI values might be expected to occur. Each SWSI unit represents about 12% of the historical occurrences. As an example of interpreting the above scale, the SWSI can be expected to be greater than -3.0, 87% of the time and less than -3.0, 13% of the time. Half the time, the SWSI will be below and half the time above a value of zero. The interval between -1.5 and +1.5 described as "Near Normal Water Supply", represents three SWSI units and would be expected to occur about one third (36%) of the time.

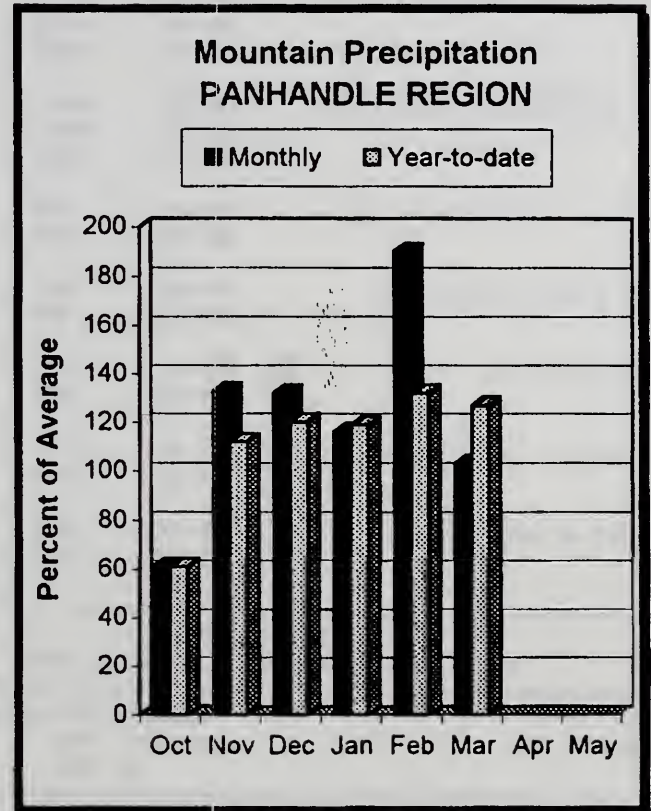
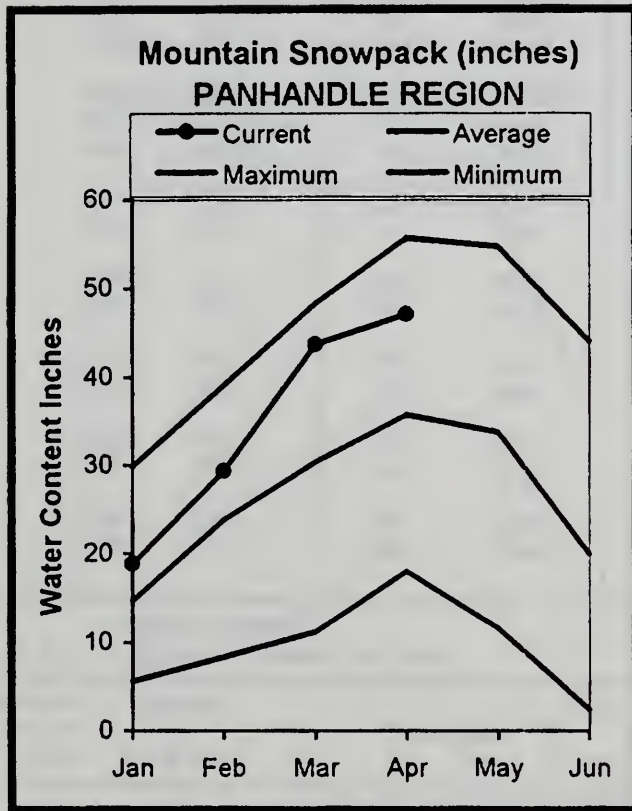
# BASIN - WIDE SNOWPACK SUMMARY

APRIL 1, 1999

| BASIN                               | PERCENT OF<br>LAST YEAR | PERCENT OF<br>AVERAGE |
|-------------------------------------|-------------------------|-----------------------|
| *****                               |                         |                       |
| PANHANDLE REGION                    |                         |                       |
| Kootenai ab Bonners Ferry           | 179%                    | 134%                  |
| Moyie River                         | 205%                    | 138%                  |
| Priest River                        | 181%                    | 162%                  |
| Pend Oreille River                  | 161%                    | 120%                  |
| Rathdrum Creek                      | 161%                    | 149%                  |
| Hayden Lake                         | 168%                    | 154%                  |
| Coeur d'Alene River                 | 186%                    | 130%                  |
| St. Joe River                       | 194%                    | 130%                  |
| Spokane River                       | 180%                    | 133%                  |
| Palouse River                       | 214%                    | 129%                  |
| CLEARWATER RIVER BASIN              |                         |                       |
| North Fork Clearwater               | 204%                    | 134%                  |
| Lochsa River                        | 186%                    | 129%                  |
| Selway River                        | 164%                    | 121%                  |
| Clearwater Basin Total              | 191%                    | 130%                  |
| SALMON RIVER BASIN                  |                         |                       |
| Salmon River ab Salmon              | 149%                    | 119%                  |
| Lemhi River                         | 125%                    | 102%                  |
| Middle Fork Salmon River            | 160%                    | 125%                  |
| South Fork Salmon River             | 163%                    | 133%                  |
| Little Salmon River                 | 179%                    | 149%                  |
| Salmon Basin Total                  | 153%                    | 122%                  |
| WEISER, PAYETTE, BOISE RIVER BASINS |                         |                       |
| Mann Creek                          | 155%                    | 154%                  |
| Weiser River                        | 169%                    | 153%                  |
| North Fork Payette                  | 167%                    | 145%                  |
| South Fork Payette                  | 149%                    | 119%                  |
| Payette Basin Total                 | 157%                    | 135%                  |
| Middle & North Fork Boise           | 147%                    | 120%                  |
| South Fork Boise River              | 143%                    | 125%                  |
| Mores Creek                         | 144%                    | 137%                  |
| Boise Basin Total                   | 146%                    | 127%                  |
| Canyon Creek                        | 181%                    | 181%                  |
| WOOD AND LOST RIVER BASINS          |                         |                       |
| Big Wood ab Magic                   | 137%                    | 113%                  |
| Camas Creek                         | 159%                    | 154%                  |
| Big Wood Basin Total                | 142%                    | 123%                  |
| Little Wood River                   | 125%                    | 114%                  |
| Fish Creek                          | 162%                    | 120%                  |
| Big Lost River                      | 138%                    | 117%                  |
| Little Lost River                   | 145%                    | 111%                  |
| Birch-Medicine Lodge Creeks         | 134%                    | 120%                  |
| UPPER SNAKE RIVER BASIN             |                         |                       |
| Camas-Beaver Creeks                 | 131%                    | 105%                  |
| Henrys Fork-Falls River             | 137%                    | 118%                  |
| Teton River                         | 119%                    | 108%                  |
| Snake above Jackson Lake            | 136%                    | 120%                  |
| Gros Ventre River                   | 120%                    | 111%                  |
| Hoback River                        | 118%                    | 104%                  |
| Greys River                         | 117%                    | 102%                  |
| Salt River                          | 114%                    | 106%                  |
| Snake above Palisades               | 126%                    | 113%                  |
| Willow Creek                        | 106%                    | 109%                  |
| Blackfoot River                     | 111%                    | 98%                   |
| Portneuf River                      | 98%                     | 105%                  |
| Snake abv American Falls Resv       | 119%                    | 110%                  |
| SOUTHSIDE SNAKE RIVER BASINS        |                         |                       |
| Raft River                          | 73%                     | 87%                   |
| Goose-Trapper Creeks                | 82%                     | 89%                   |
| Salmon Falls Creek                  | 101%                    | 87%                   |
| Bruneau River                       | 97%                     | 86%                   |
| Owyhee Basin Total                  | 130%                    | 111%                  |
| BEAR RIVER BASIN                    |                         |                       |
| Smiths & Thomas Forks               | 113%                    | 101%                  |
| Bear River ab WY-ID line            | 107%                    | 95%                   |
| Montpelier Creek                    | 125%                    | 104%                  |
| Mink Creek                          | 94%                     | 91%                   |
| Cub River                           | 91%                     | 94%                   |
| Bear River ab ID-UT line            | 101%                    | 94%                   |
| Malad River                         | 75%                     | 77%                   |

# PANHANDLE REGION

## APRIL 1, 1999



## WATER SUPPLY OUTLOOK

Higher elevation snow water content levels north of Pend Oreille Lake are at or near record levels for April 1. Smith Creek, located about 5 miles from the Canadian border at 4,800 feet, has a snowpack over 14 feet deep with 76.4 inches of water. This is the most snow water ever measured at this snow course which started in 1937. Previous maximum amount measured was 75.6 inches on May 1, 1974. Bear Mountain SNOTEL site, located in the headwaters of Lightning Creek at 5,400 feet, has 91.5 inches of snow water which is 3 inches less than the record high year of 1974. Benton Spring, north of Priest River at 4,920 feet in elevation has the 3rd highest April 1 levels since 1937, and is the same as in 1997. The good news is that lower elevation or valley snowpack throughout the Panhandle Region is much less than in 1997. Mid-elevation basins such as Rathdrum Creek and Hayden Lake are around 150% of average and are less than the 200% measured in 1997. The snowpack in the entire Pend Oreille River basin is 120% of average which is much less than the 149% in 1997. The Coeur d'Alene and St. Joe snowpack is about 130% of average. Streamflow forecasts range from 135-145% of average. With snow levels at record high levels, residents will see an extended period of high flows this summer, especially in Boundary and Bonner counties.

PANHANDLE REGION  
Streamflow Forecasts - April 1, 1999

| Forecast Point                    | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |                 |                                 |          |                 |                 | 30-Yr Avg.<br>(1000AF) |
|-----------------------------------|-----------------|------------------------------------------------------------|-----------------|---------------------------------|----------|-----------------|-----------------|------------------------|
|                                   |                 | Chance Of Exceeding *                                      |                 |                                 |          |                 |                 |                        |
|                                   |                 | 90%<br>(1000AF)                                            | 70%<br>(1000AF) | 50% (Most Probable)<br>(1000AF) | (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                        |
| KOOTENAI at Leonia (1,2)          | APR-JUN         | 5145                                                       | 5905            | 6250                            | 110      | 6595            | 7355            | 5701                   |
|                                   | APR-JUL         | 6445                                                       | 7391            | 7820                            | 109      | 8249            | 9195            | 7199                   |
|                                   | APR-SEP         | 7410                                                       | 8497            | 8990                            | 109      | 9483            | 10570           | 8275                   |
| CLARK FK at Whitehorse Rpds (1,2) | APR-JUN         | 9395                                                       | 10808           | 11450                           | 114      | 12092           | 13505           | 10050                  |
|                                   | APR-JUL         | 10790                                                      | 12447           | 13200                           | 113      | 13953           | 15610           | 11730                  |
|                                   | APR-SEP         | 11848                                                      | 13672           | 14500                           | 112      | 15328           | 17152           | 12910                  |
| PEND OREILLE Lake Inflow (1,2)    | APR-JUN         | 10595                                                      | 12318           | 13100                           | 115      | 13882           | 15605           | 11390                  |
|                                   | APR-JUL         | 12448                                                      | 14272           | 15100                           | 115      | 15928           | 17752           | 13150                  |
|                                   | APR-SEP         | 13598                                                      | 15594           | 16500                           | 115      | 17406           | 19402           | 14370                  |
| PRIEST nr Priest River (1,2)      | APR-JUL         | 778                                                        | 920             | 985                             | 121      | 1050            | 1192            | 814                    |
|                                   | APR-SEP         | 829                                                        | 981             | 1050                            | 121      | 1119            | 1271            | 868                    |
| COEUR D'ALENE at Enaville         | APR-JUL         | 932                                                        | 1014            | 1070                            | 139      | 1126            | 1208            | 770                    |
|                                   | APR-SEP         | 977                                                        | 1062            | 1120                            | 138      | 1178            | 1263            | 809                    |
| ST.JOE at Calder                  | APR-JUL         | 1388                                                       | 1490            | 1560                            | 133      | 1630            | 1732            | 1169                   |
|                                   | APR-SEP         | 1482                                                       | 1588            | 1660                            | 134      | 1732            | 1838            | 1237                   |
| SPOKANE near Post Falls (2)       | APR-JUL         | 3139                                                       | 3402            | 3580                            | 136      | 3758            | 4021            | 2633                   |
|                                   | APR-SEP         | 3258                                                       | 3527            | 3710                            | 136      | 3893            | 4162            | 2730                   |
| SPOKANE at Long Lake              | APR-JUL         | 3573                                                       | 3863            | 4060                            | 138      | 4257            | 4547            | 2936                   |
|                                   | APR-SEP         | 3815                                                       | 4116            | 4320                            | 137      | 4524            | 4825            | 3159                   |

| PANHANDLE REGION<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |        | PANHANDLE REGION<br>Watershed Snowpack Analysis - April 1, 1999 |                      |                   |         |
|----------------------------------------------------------------|-----------------|------------------------|-----------|--------|-----------------------------------------------------------------|----------------------|-------------------|---------|
| Reservoir                                                      | Usable Capacity | *** Usable Storage *** |           |        | Watershed                                                       | Number of Data Sites | This Year as % of |         |
|                                                                |                 | This Year              | Last Year | Avg    |                                                                 |                      | Last Yr           | Average |
| HUNGRY HORSE                                                   | 3451.0          | 1946.0                 | 2324.0    | 2046.0 | Kootenai ab Bonners Ferry                                       | 39                   | 179               | 134     |
| FLATHEAD LAKE                                                  | 1791.0          | 792.2                  | 603.1     | 751.9  | Moyie River                                                     | 12                   | 205               | 138     |
| NOXON RAPIDS                                                   | 335.0           | 315.4                  | 326.4     | 231.3  | Priest River                                                    | 5                    | 181               | 162     |
| PEND OREILLE                                                   | 1561.3          | 950.0                  | 898.6     | 796.0  | Pend Oreille River                                              | 112                  | 161               | 120     |
| COEUR D'ALENE                                                  | 238.5           | 236.5                  | 190.5     | 170.1  | Rathdrum Creek                                                  | 4                    | 164               | 146     |
| PRIEST LAKE                                                    | 119.3           | 56.0                   | 65.0      | 61.9   | Hayden Lake                                                     | 2                    | 168               | 154     |
|                                                                |                 |                        |           |        | Coeur d'Alene River                                             | 9                    | 186               | 130     |
|                                                                |                 |                        |           |        | St. Joe River                                                   | 4                    | 194               | 130     |
|                                                                |                 |                        |           |        | Spokane River                                                   | 17                   | 182               | 131     |
|                                                                |                 |                        |           |        | Palouse River                                                   | 2                    | 214               | 129     |

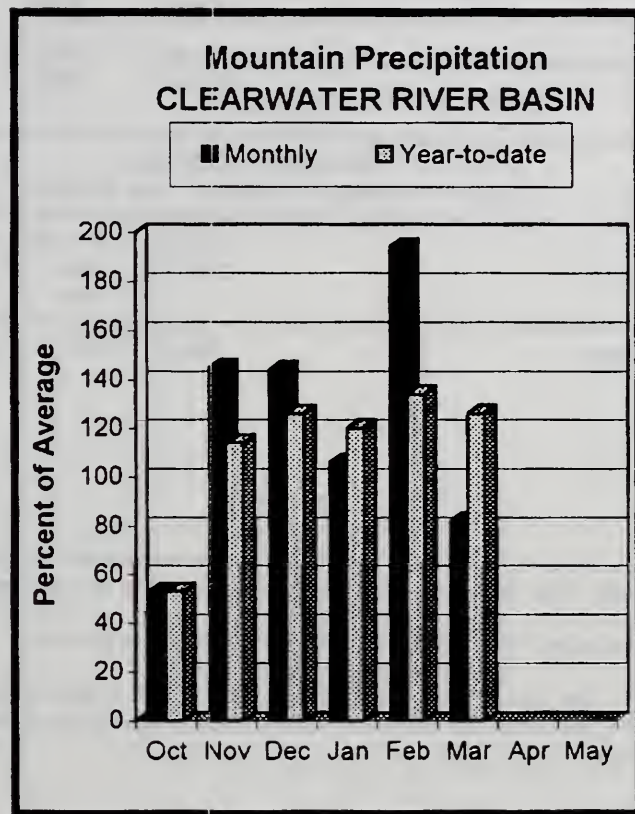
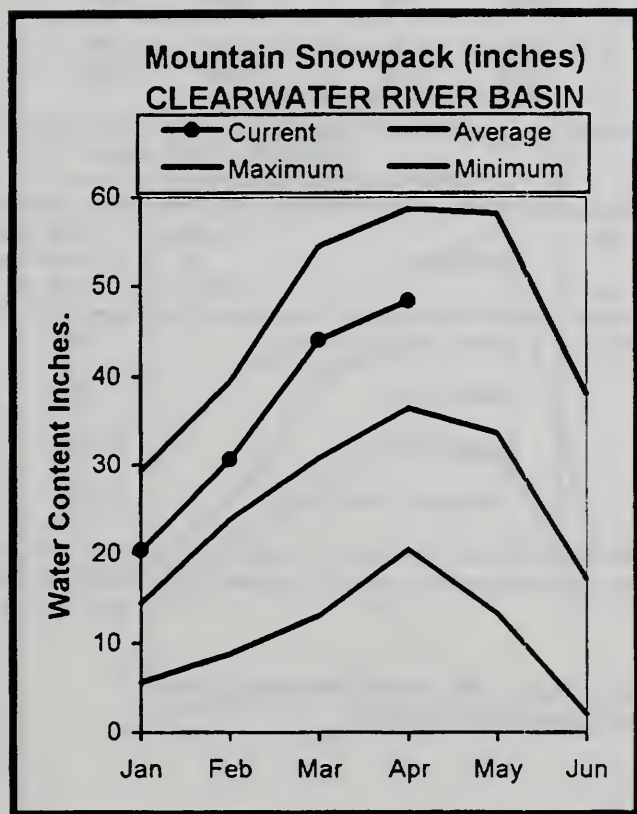
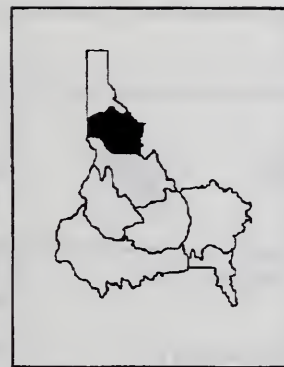
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

# CLEARWATER RIVER BASIN

## APRIL 1, 1999



## WATER SUPPLY OUTLOOK

March precipitation was 83% of average; only the Panhandle Region received more precipitation last month. A snow index for 13 sites in the Clearwater River basin shows the snowpack is 130% of average and has twice the amount of water as last year. The snowpack is the 5th highest since 1961; only years 1997, 1974, 1972 and 1971 had more snow. For the basin as a whole, the snowpack was 157% of average in 1997 and was 165% in the record high year of 1972. The snowpack is 121% of average in the Selway basin and 134% in the North Fork Clearwater basin. At the end of March, Dworshak Reservoir was drafted to 1,554,800 acre-feet, which is about 100,000 acre-feet above minimum pool and is 45% of usable capacity. Dworshak Reservoir inflow forecast is for 127% of average. The Clearwater River near Spalding is forecast at 123% of average. Water users and residents can expect an extended period of high flows and the possibility of high peak flows when the snow starts melting. Additional spring precipitation could increase these already high runoff values. Spring precipitation (April-June) varies in La Nina type years and has ranged from 85-150% of average with most years in the 85-100% of the normal range.

CLEARWATER RIVER BASIN  
Streamflow Forecasts - April 1, 1999

| Forecast Point               | Forecast Period | <===== Drier ===== Future Conditions ===== Wetter =====> |                 |                                 |          |                 |                 | 30-Yr Avg.<br>(1000AF) |
|------------------------------|-----------------|----------------------------------------------------------|-----------------|---------------------------------|----------|-----------------|-----------------|------------------------|
|                              |                 | =====                                                    |                 | Chance Of Exceeding *           |          | =====           |                 |                        |
|                              |                 | 90%<br>(1000AF)                                          | 70%<br>(1000AF) | 50% (Most Probable)<br>(1000AF) | (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                        |
| DWORSHAK RESV INFLOW (1,2)   | APR-JUL         | 2932                                                     | 3254            | 3400                            | 127      | 3546            | 3868            | 2687                   |
|                              | APR-SEP         | 3124                                                     | 3465            | 3620                            | 127      | 3775            | 4116            | 2858                   |
| CLEARWATER at Orofino (1)    | APR-JUL         | 4271                                                     | 5144            | 5540                            | 117      | 5936            | 6809            | 4718                   |
|                              | APR-SEP         | 4509                                                     | 5431            | 5850                            | 118      | 6269            | 7191            | 4976                   |
| CLEARWATER at Spalding (1,2) | APR-JUL         | 7552                                                     | 8775            | 9330                            | 123      | 9885            | 11108           | 7618                   |
|                              | APR-SEP         | 7988                                                     | 9282            | 9870                            | 123      | 10458           | 11752           | 8052                   |

| CLEARWATER RIVER BASIN<br>Reservoir Storage (1000 AF) - End of March |                    |                        |              |        | CLEARWATER RIVER BASIN<br>Watershed Snowpack Analysis - April 1, 1999 |                            |                   |         |
|----------------------------------------------------------------------|--------------------|------------------------|--------------|--------|-----------------------------------------------------------------------|----------------------------|-------------------|---------|
| Reservoir                                                            | Usable<br>Capacity | *** Usable Storage *** |              |        | Watershed                                                             | Number<br>of<br>Data Sites | This Year as % of |         |
|                                                                      |                    | This<br>Year           | Last<br>Year | Avg    |                                                                       |                            | Last Yr           | Average |
| DWORSHAK                                                             | 3468.0             | 1554.8                 | 2575.8       | 2093.0 | North Fork Clearwater                                                 | 10                         | 204               | 134     |
|                                                                      |                    |                        |              |        | Lochsa River                                                          | 4                          | 186               | 129     |
|                                                                      |                    |                        |              |        | Selway River                                                          | 5                          | 164               | 121     |
|                                                                      |                    |                        |              |        | Clearwater Basin Total                                                | 18                         | 191               | 130     |
|                                                                      |                    |                        |              |        |                                                                       |                            |                   |         |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

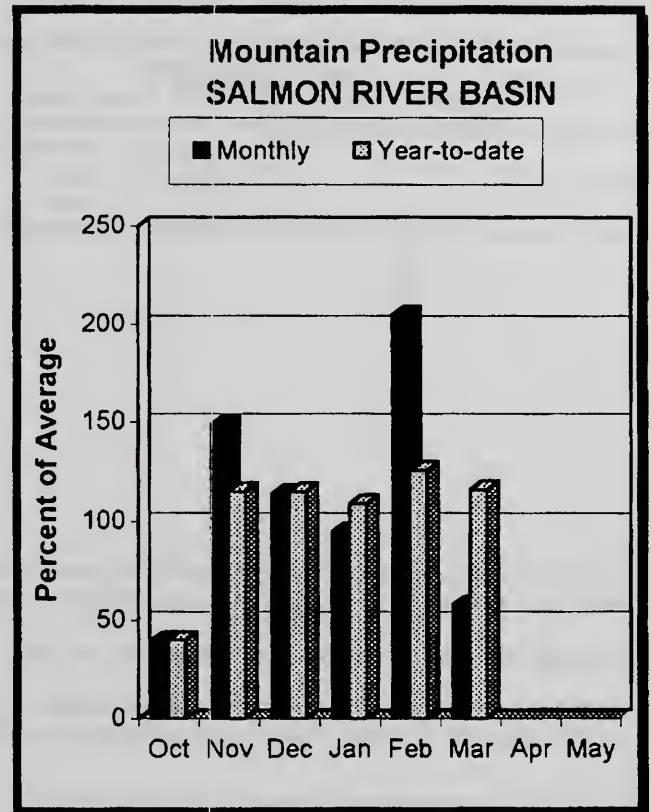
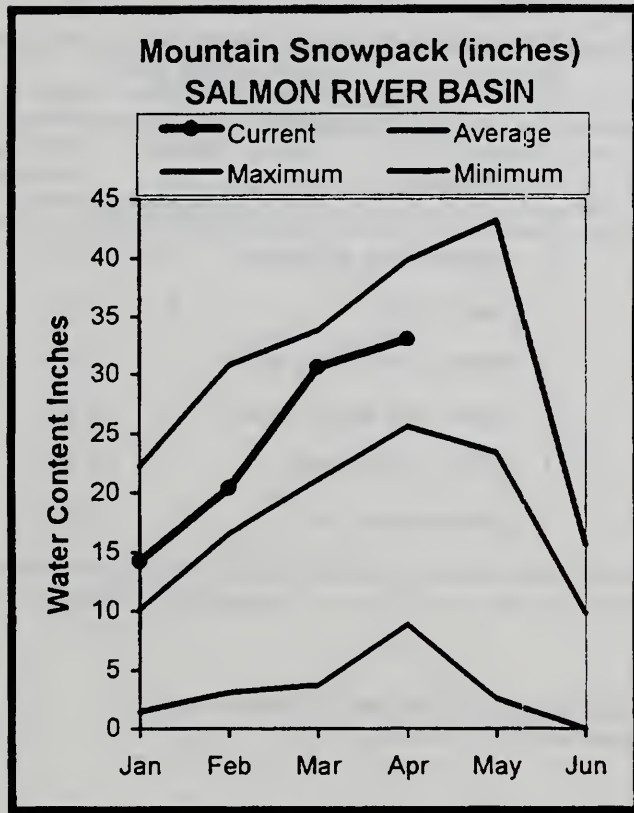
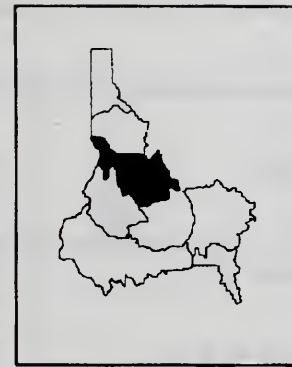
The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

# SALMON RIVER BASIN

## APRIL 1, 1999



## WATER SUPPLY OUTLOOK

An index of 4 snow measuring stations in the Little Salmon basin shows the snowpack is at a new record high level since measurements started in 1961. The snowpack is 149% of average and slightly higher than the previous record years of 1971 and 1974. The snowpack decreases from west to east across the basin; South Fork is 133% of average, Middle Fork is 125%, and Lemhi basin is 102%. Overall, the Salmon basin snowpack is 122% of average, which is still less than the 137% in 1997. Streamflow forecasts are for 1121% of average for the Salmon River above Salmon and 119% for the Salmon River near White Bird. Lower elevation snowmelt brought an increase in the Little Salmon River; however, higher elevation snow is still accumulating and at record high at Brundage Mountain SNOTEL site. Residents should be prepared for an extended period of high flows. River runners will have an extended season after the snowmelt streamflow peaks occur. However, the above normal snowpack also brings the potential for high peak flows; boaters should use caution until streams decrease to desirable boating levels.

SALMON RIVER BASIN  
Streamflow Forecasts - April 1, 1999

| Forecast Point           | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |                 |                                 |          |                 |                 | 30-Yr Avg.<br>(1000AF) |
|--------------------------|-----------------|------------------------------------------------------------|-----------------|---------------------------------|----------|-----------------|-----------------|------------------------|
|                          |                 | =====                                                      |                 | Chance Of Exceeding *           |          | =====           |                 |                        |
|                          |                 | 90%<br>(1000AF)                                            | 70%<br>(1000AF) | 50% (Most Probable)<br>(1000AF) | (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                        |
| SALMON at Salmon (1)     | APR-JUL         | 739                                                        | 953             | 1050                            | 121      | 1147            | 1361            | 869                    |
|                          | APR-SEP         | 877                                                        | 1127            | 1240                            | 122      | 1353            | 1603            | 1019                   |
| SALMON at White Bird (1) | APR-JUL         | 5690                                                       | 6646            | 7080                            | 119      | 7514            | 8470            | 5956                   |
|                          | APR-SEP         | 6309                                                       | 7369            | 7850                            | 119      | 8331            | 9391            | 6602                   |

| SALMON RIVER BASIN<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |     | SALMON RIVER BASIN<br>Watershed Snowpack Analysis - April 1, 1999 |                      |                   |         |
|------------------------------------------------------------------|-----------------|------------------------|-----------|-----|-------------------------------------------------------------------|----------------------|-------------------|---------|
| Reservoir                                                        | Usable Capacity | *** Usable Storage *** |           |     | Watershed                                                         | Number of Data Sites | This Year as % of |         |
|                                                                  |                 | This Year              | Last Year | Avg |                                                                   |                      | Last Yr           | Average |
|                                                                  |                 |                        |           |     | Salmon River ab Salmon                                            | 11                   | 150               | 119     |
|                                                                  |                 |                        |           |     | Lemhi River                                                       | 9                    | 124               | 101     |
|                                                                  |                 |                        |           |     | Middle Fork Salmon River                                          | 3                    | 160               | 125     |
|                                                                  |                 |                        |           |     | South Fork Salmon River                                           | 3                    | 163               | 133     |
|                                                                  |                 |                        |           |     | Little Salmon River                                               | 4                    | 179               | 149     |
|                                                                  |                 |                        |           |     | Salmon Basin Total                                                | 31                   | 153               | 123     |

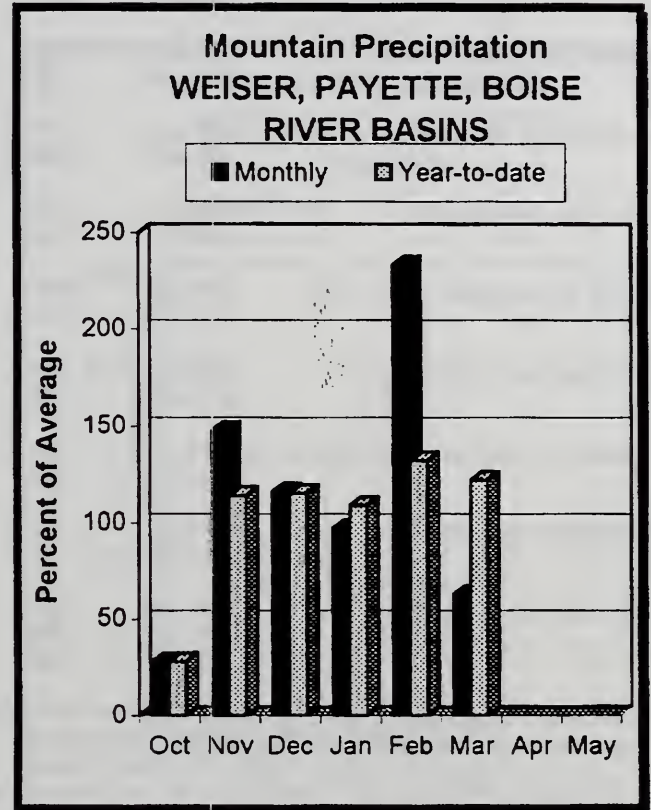
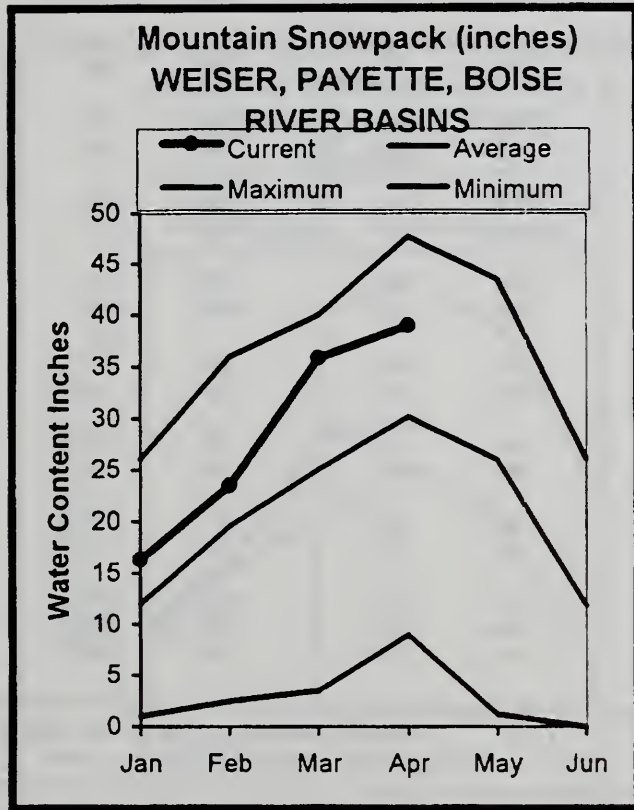
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

# WEISER, PAYETTE, BOISE RIVER BASINS APRIL 1, 1999



## WATER SUPPLY OUTLOOK

A warm dry March (precipitation was 63% of average) started melting snow in the foothills and lower elevations, but mid-elevations above approximately 5,000 feet have not started melting. The Weiser basin snowpack is 154% of average, 2nd highest since 1961, only 1971 had more snow. The North Fork Payette snowpack is 145% of average, also 2nd highest since 1961 and only exceeded by 1974. Brundage Reservoir SNOTEL site, located just north of McCall at 6,300 feet, is at an all-time record for the most snow water ever measured. Brundage Reservoir has 47.1 inches of water; previous high was 45.3 inches on May 1, 1974. Similarly, Squaw Flat is 153% of average and record high for April 1; Placer Creek snow course has 31.4 inches of water, the highest since measurements started in 1952. Snowpack decreases to 120% of average in the South Fork Payette and Middle Fork/North Fork Boise basins as a result of an elevation distribution of the snowpack. Sites less than about 6,300 elevation in feet in the Boise basin are reporting similar levels as in 1997; higher elevation sites have less snow than in 1997. Trinity Mountain SNOTEL, located at elevation 7,700 feet in the South Fork Boise basin, has 47.0 inches of snow water. In 1997, it had 65.4 inches. The Boise and Payette reservoirs systems are being drafted and are about half full. With the highest snowpacks in the Weiser and Payette basins in over 25 years, residents can expect high runoff volumes and the possibility of flooding; these streams are forecast in the 145-155% of average range. The Boise River is forecast at 122% of average.

**WEISER, PAYETTE, BOISE RIVER BASINS**  
Streamflow Forecasts - April 1, 1999

| Forecast Point                       | Forecast Period | <===== Drier ===== Future Conditions ===== Wetter =====> |                 |                                 |          |                 |                 | 30-Yr Avg.<br>(1000AF) |
|--------------------------------------|-----------------|----------------------------------------------------------|-----------------|---------------------------------|----------|-----------------|-----------------|------------------------|
|                                      |                 | Chance Of Exceeding *                                    |                 |                                 |          |                 |                 |                        |
|                                      |                 | 90%<br>(1000AF)                                          | 70%<br>(1000AF) | 50% (Most Probable)<br>(1000AF) | (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                        |
| WEISER nr Weiser (1)                 | APR-JUL         | 415                                                      | 535             | 590                             | 153      | 645             | 765             | 386                    |
|                                      | APR-SEP         | 448                                                      | 577             | 635                             | 153      | 693             | 822             | 415                    |
| SF PAYETTE at Lowman                 | APR-JUL         | 452                                                      | 488             | 512                             | 119      | 536             | 572             | 432                    |
|                                      | APR-SEP         | 512                                                      | 553             | 580                             | 119      | 607             | 648             | 488                    |
| DEADWOOD RESERVOIR Inflow (1,2)      | APR-JUL         | 146                                                      | 162             | 169                             | 125      | 176             | 192             | 135                    |
|                                      | APR-SEP         | 153                                                      | 170             | 177                             | 124      | 184             | 201             | 143                    |
| NF PAYETTE nr Cascade (1,2)          | APR-JUL         | 589                                                      | 669             | 705                             | 142      | 741             | 821             | 496                    |
|                                      | APR-SEP         | 629                                                      | 716             | 755                             | 142      | 794             | 881             | 533                    |
| NF PAYETTE nr Banks (2)              | APR-JUL         | 786                                                      | 862             | 913                             | 141      | 964             | 1040            | 648                    |
|                                      | APR-SEP         | 826                                                      | 909             | 965                             | 140      | 1021            | 1104            | 690                    |
| PAYETTE nr Horseshoe Bend (1,2)      | APR-JUL         | 1897                                                     | 2105            | 2200                            | 136      | 2295            | 2503            | 1618                   |
|                                      | APR-SEP         | 2045                                                     | 2276            | 2380                            | 136      | 2484            | 2715            | 1755                   |
| BOISE near Twin Springs (1)          | APR-JUL         | 669                                                      | 738             | 770                             | 122      | 802             | 871             | 631                    |
|                                      | APR-SEP         | 720                                                      | 796             | 830                             | 121      | 864             | 940             | 686                    |
| SF BOISE at Anderson Ranch Dam (1,2) | APR-JUL         | 561                                                      | 619             | 645                             | 119      | 671             | 729             | 544                    |
|                                      | APR-SEP         | 601                                                      | 662             | 690                             | 119      | 718             | 779             | 582                    |
| MORES CREEK near Arrowrock Dam       | APR-JUL         | 134                                                      | 149             | 160                             | 124      | 171             | 186             | 129                    |
|                                      | APR-SEP         | 138                                                      | 154             | 165                             | 123      | 176             | 192             | 134                    |
| BOISE near Boise (1,2)               | APR-JUN         | 1363                                                     | 1478            | 1530                            | 121      | 1582            | 1697            | 1264                   |
|                                      | APR-JUL         | 1514                                                     | 1665            | 1734                            | 122      | 1803            | 1954            | 1421                   |
|                                      | APR-SEP         | 1625                                                     | 1787            | 1860                            | 121      | 1933            | 2095            | 1535                   |

**WEISER, PAYETTE, BOISE RIVER BASINS**  
Reservoir Storage (1000 AF) - End of March

**WEISER, PAYETTE, BOISE RIVER BASINS**  
Watershed Snowpack Analysis - April 1, 1999

| Reservoir               | Usable Capacity | *** Usable Storage *** |           |       | Watershed                 | Number of Data Sites | This Year as % of |         |
|-------------------------|-----------------|------------------------|-----------|-------|---------------------------|----------------------|-------------------|---------|
|                         |                 | This Year              | Last Year | Avg   |                           |                      | Last Yr           | Average |
| MANN CREEK              | 11.1            | 9.0                    | 10.0      | 8.4   | Mann Creek                | 2                    | 155               | 154     |
| CASCADE                 | 703.2           | 386.0                  | 566.6     | 392.5 | Weiser River              | 5                    | 169               | 153     |
| DEADWOOD                | 161.9           | 86.7                   | 129.4     | 90.4  | North Fork Payette        | 8                    | 167               | 145     |
| ANDERSON RANCH          | 464.2           | 260.7                  | 369.6     | 276.2 | South Fork Payette        | 5                    | 149               | 119     |
| ARROWROCK               | 286.6           | 120.9                  | 275.2     | 222.2 | Payette Basin Total       | 14                   | 157               | 135     |
| LUCKY PEAK              | 293.2           | 155.9                  | 192.3     | 156.1 | Middle & North Fork Boise | 6                    | 147               | 120     |
| LAKE LOWELL (DEER FLAT) | 177.1           | 140.2                  | 122.8     | 140.8 | South Fork Boise River    | 9                    | 143               | 125     |
|                         |                 |                        |           |       | Mores Creek               | 5                    | 144               | 137     |
|                         |                 |                        |           |       | Boise Basin Total         | 16                   | 146               | 127     |
|                         |                 |                        |           |       | Canyon Creek              | 2                    | 181               | 181     |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

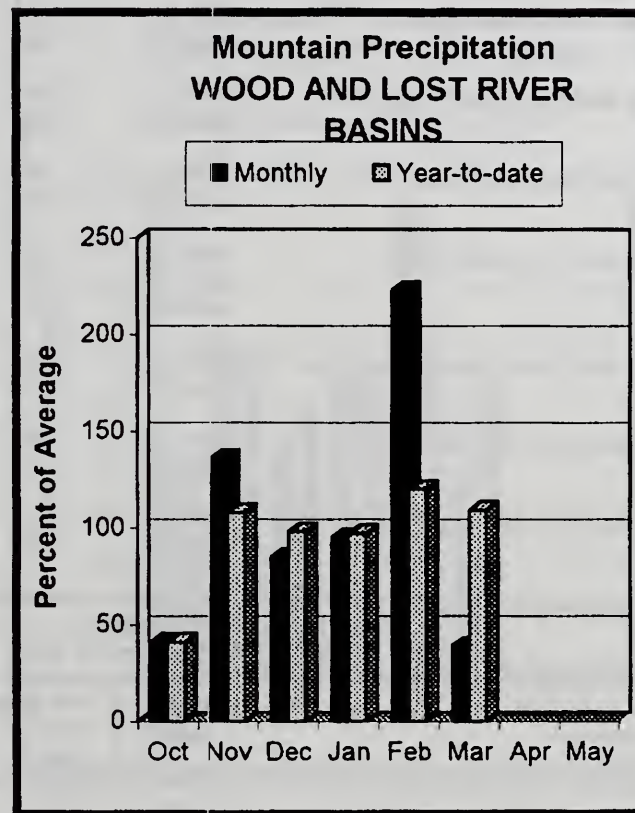
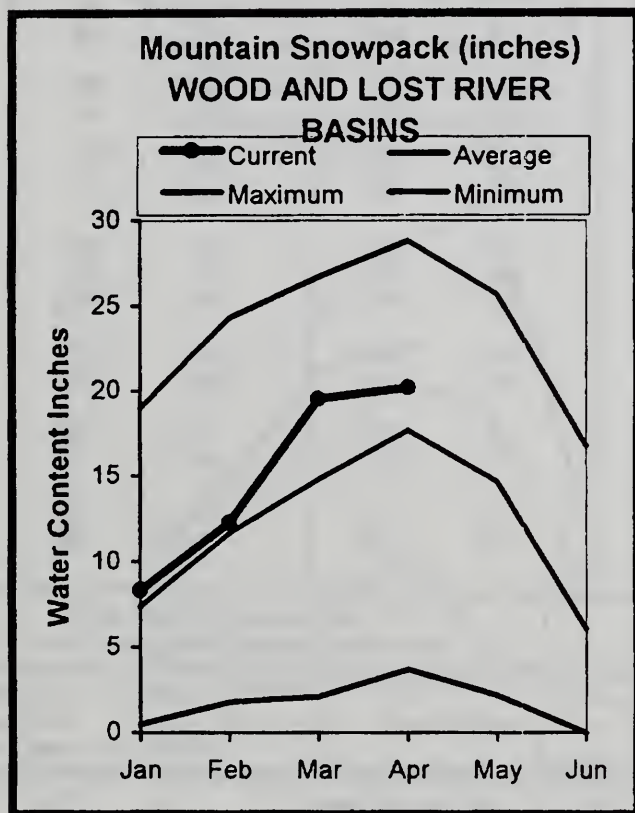
The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

# WOOD and LOST RIVER BASINS

## APRIL 1, 1999



## WATER SUPPLY OUTLOOK

March brought warm dry weather to the central Idaho Mountains. March precipitation was well below normal at 39% of average. Most SNOTEL sites in the Wood and Lost basins received 0.5 to 1.0 inches of precipitation while normal amounts are usually in the 2-3 inch range. Higher elevation snow measuring increased slightly from March 1 while lower sites below 6,500 feet in elevation started melting. Snowpack percentages dropped about 20 percentage points from last month and now range from 110-125% of average with the exception of Camas basin which is 154%. Camas Creek Divide, located at 5,710 feet, has 17.7 inches, the highest amount measured on April 1 since records started in 1960. Mackay Reservoir is 70% full; inflow forecast is for 113% of average. Little Wood Reservoir was drafted to 39% of capacity and the forecast is for 131% of average. Magic Reservoir is 53% full, with the inflow forecast projected at 132% of average. River levels will be increasing in the next few months as snowmelt in the higher elevations get into full swing. Reservoir managers may have to adjust operations based on future spring precipitation. Spring rains or lack of rain, can have a large influence on runoff volumes.

WOOD AND LOST RIVER BASINS  
Streamflow Forecasts - April 1, 1999

| Forecast Point                      | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |                 |                                          |     |                 |                 | 30-Yr Avg.<br>(1000AF) |
|-------------------------------------|-----------------|------------------------------------------------------------|-----------------|------------------------------------------|-----|-----------------|-----------------|------------------------|
|                                     |                 | Chance Of Exceeding *                                      |                 |                                          |     |                 |                 |                        |
|                                     |                 | 90%<br>(1000AF)                                            | 70%<br>(1000AF) | 50% (Most Probable)<br>(1000AF) (% AVG.) |     | 30%<br>(1000AF) | 10%<br>(1000AF) |                        |
| BIG WOOD at Hailey (1)              | APR-JUL         | 248                                                        | 293             | 315                                      | 124 | 338             | 390             | 255                    |
|                                     | APR-SEP         | 278                                                        | 330             | 355                                      | 123 | 381             | 441             | 289                    |
| BIG WOOD near Bellevue              | APR-JUL         | 168                                                        | 197             | 218                                      | 119 | 240             | 274             | 183                    |
|                                     | APR-SEP         | 183                                                        | 213             | 235                                      | 119 | 258             | 293             | 197                    |
| CAMAS CREEK near Blaine             | APR-JUL         | 116                                                        | 130             | 140                                      | 137 | 151             | 167             | 102                    |
|                                     | APR-SEP         | 116                                                        | 131             | 141                                      | 137 | 152             | 168             | 103                    |
| BIG WOOD below Magic Dam (2)        | APR-JUL         | 332                                                        | 364             | 385                                      | 131 | 406             | 438             | 295                    |
|                                     | APR-SEP         | 352                                                        | 387             | 410                                      | 132 | 433             | 468             | 310                    |
| LITTLE WOOD near Carey (2)          | APR-JUL         | 99                                                         | 111             | 120                                      | 131 | 129             | 141             | 92                     |
|                                     | APR-SEP         | 108                                                        | 122             | 131                                      | 132 | 140             | 154             | 99                     |
| BIG LOST at Howell Ranch            | APR-JUN         | 132                                                        | 149             | 160                                      | 114 | 171             | 188             | 141                    |
|                                     | APR-JUL         | 168                                                        | 191             | 206                                      | 114 | 221             | 244             | 181                    |
|                                     | APR-SEP         | 192                                                        | 217             | 235                                      | 114 | 253             | 278             | 206                    |
| BIG LOST below Mackay Reservoir (2) | APR-JUL         | 133                                                        | 156             | 172                                      | 113 | 188             | 211             | 152                    |
|                                     | APR-SEP         | 164                                                        | 190             | 208                                      | 113 | 226             | 252             | 184                    |
| LITTLE LOST blw Wet Creek           | APR-JUL         | 28                                                         | 32              | 35                                       | 113 | 38              | 42              | 31                     |
|                                     | APR-SEP         | 34                                                         | 40              | 44                                       | 113 | 48              | 54              | 39                     |
| LITTLE LOST nr Howe (Disc)          | APR-JUL         | 32                                                         | 35              | 37                                       | 113 | 40              | 43              | 33                     |
|                                     | APR-SEP         | 41                                                         | 45              | 48                                       | 112 | 51              | 56              | 43                     |

| WOOD AND LOST RIVER BASINS<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |       | WOOD AND LOST RIVER BASINS<br>Watershed Snowpack Analysis - April 1, 1999 |                      |                   |         |
|--------------------------------------------------------------------------|-----------------|------------------------|-----------|-------|---------------------------------------------------------------------------|----------------------|-------------------|---------|
| Reservoir                                                                | Usable Capacity | *** Usable Storage *** |           |       | Watershed                                                                 | Number of Data Sites | This Year as % of |         |
|                                                                          |                 | This Year              | Last Year | Avg   |                                                                           |                      | Last Yr           | Average |
| MAGIC                                                                    | 191.5           | 101.6                  | 170.5     | 113.2 | Big Wood ab Magic                                                         | 8                    | 136               | 113     |
| LITTLE WOOD                                                              | 30.0            | 7.5                    | 20.7      | 19.2  | Camas Creek                                                               | 5                    | 159               | 154     |
| MACKAY                                                                   | 44.4            | 31.2                   | 38.2      | 33.1  | Big Wood Basin Total                                                      | 13                   | 142               | 123     |
|                                                                          |                 |                        |           |       | Little Wood River                                                         | 4                    | 125               | 114     |
|                                                                          |                 |                        |           |       | Fish Creek                                                                | 3                    | 162               | 120     |
|                                                                          |                 |                        |           |       | Big Lost River                                                            | 7                    | 138               | 117     |
|                                                                          |                 |                        |           |       | Little Lost River                                                         | 4                    | 145               | 111     |
|                                                                          |                 |                        |           |       | Birch-Medicine Lodge Cree                                                 | 4                    | 134               | 120     |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

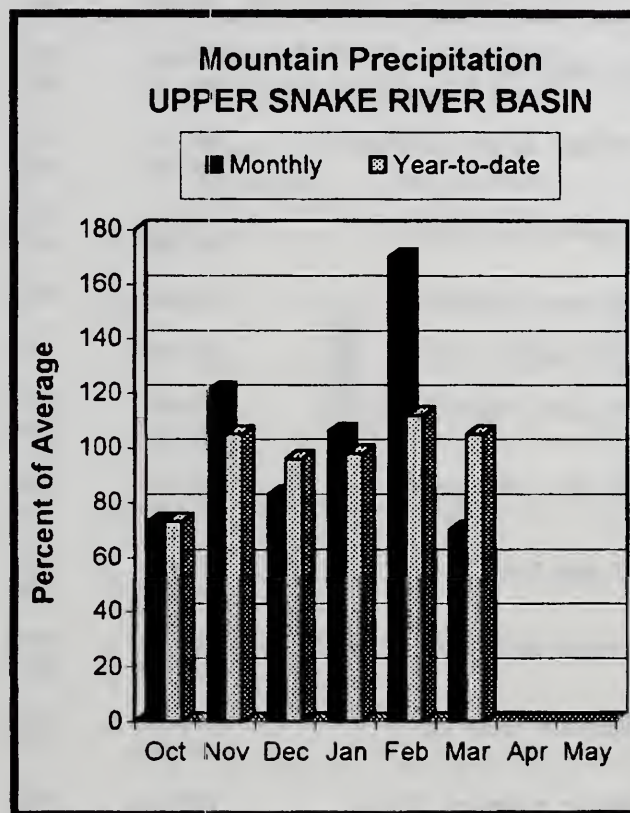
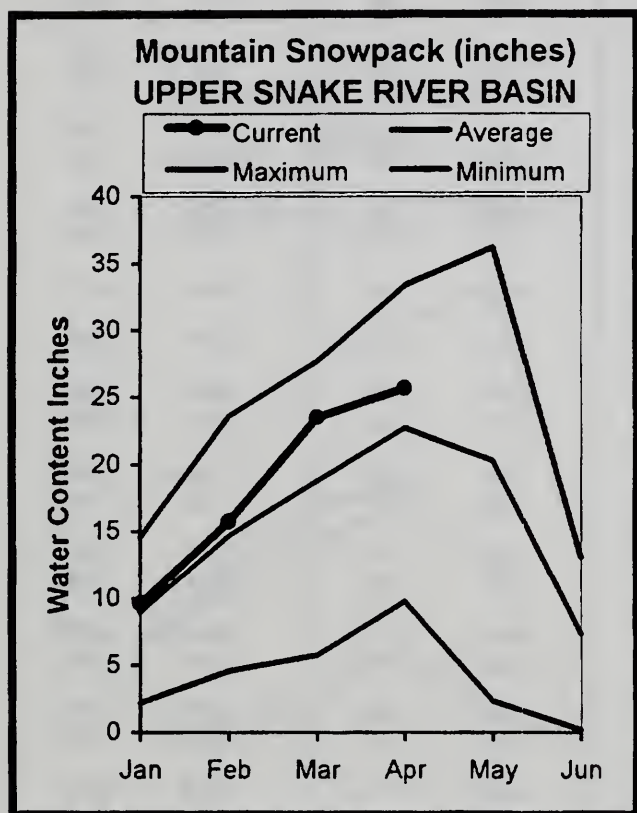
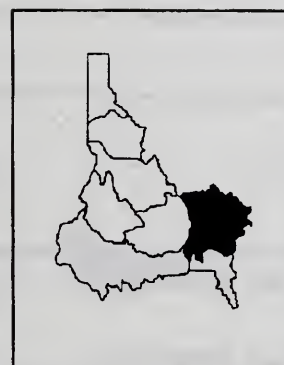
The average is computed for the 1961-1990 base period.

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(2) - The value is natural flow - actual flow may be affected by upstream water management.

# UPPER SNAKE RIVER BASIN

## APRIL 1, 1999



## WATER SUPPLY OUTLOOK

March precipitation was 70% of average and is 105% for the water year to date. Snowpack percentages in the upper Snake basin range from 100-120% of average. The highest snowpacks are in the Snake River above Jackson Lake and Henrys Fork/Falls River basins. The snowpack for the Snake River basin above Palisades Reservoir is 113% of average. The snowpack was 90% of average in 1998 and was record high in 1997 at 146%. Releases were being made to maintain adequate runoff space for this year's runoff. Combined reservoir storage for the 8 major upper Snake reservoirs is 73% of capacity which is normal for this time of year. Streamflow forecasts range from 100-120% of average in this area. Water supplies will be adequate for the many diverse uses in the upper Snake basin.

UPPER SNAKE RIVER BASIN  
Streamflow Forecasts - April 1, 1999

| Forecast Point                   | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |                 |                                 |          |                 |                 | 30-Yr Avg.<br>(1000AF) |
|----------------------------------|-----------------|------------------------------------------------------------|-----------------|---------------------------------|----------|-----------------|-----------------|------------------------|
|                                  |                 | Chance Of Exceeding *                                      |                 |                                 |          |                 |                 |                        |
|                                  |                 | 90%<br>(1000AF)                                            | 70%<br>(1000AF) | 50% (Most Probable)<br>(1000AF) | (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                        |
| HENRYS FORK near Ashton (2)      | APR-JUL         | 528                                                        | 573             | 604                             | 111      | 635             | 680             | 544                    |
|                                  | APR-SEP         | 708                                                        | 763             | 800                             | 110      | 837             | 892             | 730                    |
| HENRYS FORK near Rexburg (2)     | APR-JUL         | 1109                                                       | 1247            | 1340                            | 109      | 1433            | 1571            | 1228                   |
|                                  | APR-SEP         | 1406                                                       | 1563            | 1670                            | 108      | 1777            | 1934            | 1551                   |
| FALLS near Squirrel (1,2)        | APR-JUL         | 328                                                        | 374             | 395                             | 109      | 416             | 462             | 364                    |
|                                  | APR-SEP         | 403                                                        | 449             | 470                             | 109      | 491             | 537             | 432                    |
| TETON near Driggs                | APR-JUL         | 127                                                        | 147             | 161                             | 106      | 175             | 195             | 152                    |
|                                  | APR-SEP         | 168                                                        | 193             | 210                             | 106      | 227             | 252             | 199                    |
| TETON near St. Anthony           | APR-JUL         | 324                                                        | 372             | 404                             | 107      | 436             | 484             | 377                    |
|                                  | APR-SEP         | 394                                                        | 448             | 485                             | 106      | 522             | 576             | 457                    |
| SNAKE near Moran (1,2)           | APR-SEP         | 889                                                        | 986             | 1030                            | 119      | 1074            | 1171            | 869                    |
| PACIFIC CREEK at Moran           | APR-SEP         | 165                                                        | 183             | 195                             | 118      | 207             | 225             | 166                    |
| SNAKE above Palisades (2)        | APR-JUL         | 2548                                                       | 2680            | 2770                            | 120      | 2860            | 2992            | 2311                   |
|                                  | APR-SEP         | 2934                                                       | 3095            | 3205                            | 120      | 3315            | 3526            | 2671                   |
| GREYS above Palisades            | APR-JUL         | 295                                                        | 324             | 343                             | 103      | 362             | 391             | 333                    |
|                                  | APR-SEP         | 336                                                        | 368             | 390                             | 101      | 412             | 444             | 388                    |
| SALT near Etna                   | APR-JUL         | 258                                                        | 298             | 325                             | 102      | 352             | 392             | 319                    |
|                                  | APR-SEP         | 322                                                        | 369             | 400                             | 100      | 431             | 478             | 399                    |
| PALISADES RESERVOIR INFLOW (1,2) | APR-JUL         | 3281                                                       | 3606            | 3753                            | 116      | 3900            | 4225            | 3226                   |
|                                  | APR-SEP         | 3819                                                       | 4191            | 4360                            | 116      | 4529            | 4901            | 3763                   |
| SNAKE near Heise (2)             | APR-JUL         | 3602                                                       | 3842            | 4006                            | 116      | 4170            | 4410            | 3451                   |
|                                  | APR-SEP         | 4220                                                       | 4500            | 4690                            | 116      | 4880            | 5160            | 4049                   |
| SNAKE nr Blackfoot (1,2)         | APR-JUL         | 4207                                                       | 4872            | 5174                            | 116      | 5476            | 6141            | 4444                   |
|                                  | APR-SEP         | 5232                                                       | 5966            | 6300                            | 115      | 6634            | 7368            | 5482                   |
| PORTNEUF at Topaz                | APR-JUL         | 58                                                         | 66              | 72                              | 100      | 78              | 86              | 72                     |
|                                  | APR-SEP         | 76                                                         | 85              | 92                              | 99       | 99              | 108             | 93                     |
| AMERICAN FALLS RESV INFLOW (1,2) | APR-JUL         | 2652                                                       | 3393            | 3730                            | 122      | 4067            | 4808            | 3066                   |
|                                  | APR-SEP         | 2745                                                       | 3622            | 4020                            | 122      | 4418            | 5295            | 3303                   |

| UPPER SNAKE RIVER BASIN<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |        | UPPER SNAKE RIVER BASIN<br>Watershed Snowpack Analysis - April 1, 1999 |                      |                   |         |
|-----------------------------------------------------------------------|-----------------|------------------------|-----------|--------|------------------------------------------------------------------------|----------------------|-------------------|---------|
| Reservoir                                                             | Usable Capacity | *** Usable Storage *** |           |        | Watershed                                                              | Number of Data Sites | This Year as % of |         |
|                                                                       |                 | This Year              | Last Year | Avg    |                                                                        |                      | Last Yr           | Average |
| HENRYS LAKE                                                           | 90.4            | 85.6                   | 87.7      | 80.3   | Camas-Beaver Creeks                                                    | 4                    | 131               | 105     |
| ISLAND PARK                                                           | 135.2           | 109.4                  | 114.3     | 118.7  | Henrys Fork-Falls River                                                | 12                   | 137               | 118     |
| GRASSY LAKE                                                           | 15.2            | 13.2                   | 7.6       | 11.2   | Teton River                                                            | 8                    | 119               | 108     |
| JACKSON LAKE                                                          | 847.0           | 596.7                  | 648.6     | 473.2  | SNAKE above Jackson Lake                                               | 9                    | 136               | 120     |
| PALISADES                                                             | 1400.0          | 713.7                  | 983.3     | 1014.0 | Gros Ventre River                                                      | 3                    | 120               | 111     |
| RIRIE                                                                 | 80.5            | 52.1                   | 50.4      | 39.5   | Hoback River                                                           | 6                    | 118               | 104     |
| BLACKFOOT                                                             | 348.7           | 275.2                  | 281.1     | 245.3  | Greys River                                                            | 4                    | 117               | 102     |
| AMERICAN FALLS                                                        | 1672.6          | 1501.8                 | 1573.4    | 1462.0 | Salt River                                                             | 5                    | 114               | 106     |
|                                                                       |                 |                        |           |        | SNAKE above Palisades                                                  | 30                   | 126               | 113     |
|                                                                       |                 |                        |           |        | Willow Creek                                                           | 7                    | 106               | 109     |
|                                                                       |                 |                        |           |        | Blackfoot River                                                        | 5                    | 111               | 98      |
|                                                                       |                 |                        |           |        | Portneuf River                                                         | 6                    | 98                | 105     |
|                                                                       |                 |                        |           |        | SNAKE abv American Falls                                               | 45                   | 119               | 110     |

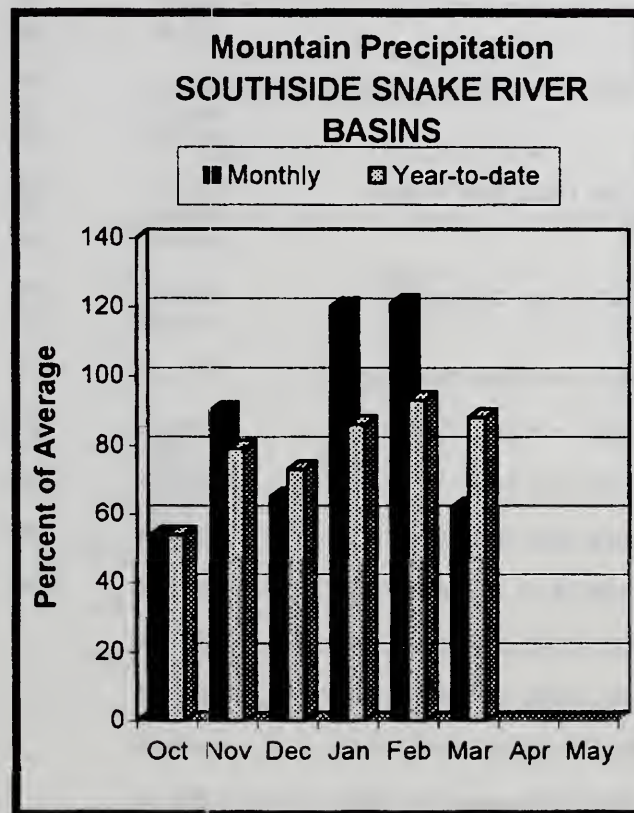
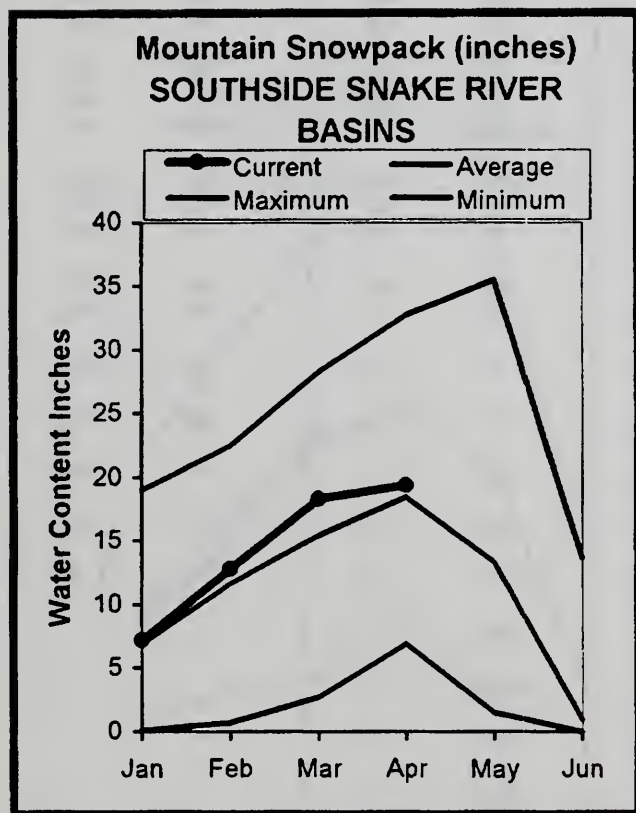
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

# SOUTHSIDE SNAKE RIVER BASINS APRIL 1, 1999



## WATER SUPPLY OUTLOOK

Warm temperatures and little precipitation in March allowed the snow to start melting gradually in the Owyhee basin. Streamflows increased but not of significant magnitude. In contrast, low elevations streams in the South Hills, which usually start flowing the last week of March, have only increased slightly. Precipitation in March ranged from 50-70% of average in these basins south of the Snake River. Water year to date precipitation is 88% of average. Some mid-elevation snow measuring sites in the South Hills started melting in March, but cool wet weather in late March and early April allowed the snowpack to start accumulating again and regain the amounts that were lost. Snowpack percentages are 90% of average, except in the Owyhee basin which is 111% of average. Outflows were reduced from Owyhee Reservoir which is currently 90% full. Salmon Falls is 48% full and has plenty of room for the 80% of average runoff that is forecast for Salmon Falls Creek. Oakley Reservoir inflow is forecast at 88% of average. Oakley Reservoir is 65% full and may start to releasing water to maintain adequate storage space until after the snowmelt streamflow peak has occurred. Losing some of the low snow last month helped reduce the chance of a rapid melt, but the higher elevation snowpack will provide additional runoff as the snow melt season progresses. Reservoir operators should be cautious of the rapid changes that spring rains can make by providing additional runoff and reducing irrigation demand as was observed last year across southern Idaho.

SOUTHSIDE SNAKE RIVER BASINS  
Streamflow Forecasts - April 1, 1999

| Forecast Point                        | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |                 |                                          |     |                 |                 |                        |
|---------------------------------------|-----------------|------------------------------------------------------------|-----------------|------------------------------------------|-----|-----------------|-----------------|------------------------|
|                                       |                 | Chance Of Exceeding *                                      |                 |                                          |     |                 |                 |                        |
|                                       |                 | 90%<br>(1000AF)                                            | 70%<br>(1000AF) | 50% (Most Probable)<br>(1000AF) (% AVG.) |     | 30%<br>(1000AF) | 10%<br>(1000AF) | 30-Yr Avg.<br>(1000AF) |
| OAKLEY RESV INFLOW                    | APR-JUL         | 16.0                                                       | 21              | 24                                       | 87  | 28              | 34              | 28                     |
|                                       | APR-SEP         | 18.4                                                       | 23              | 27                                       | 88  | 31              | 37              | 31                     |
| OAKLEY RESV STORAGE                   | APR-30          | 49                                                         | 51              | 52                                       | 138 | 54              | 55              | 38                     |
|                                       | MAY-31          | 45                                                         | 49              | 51                                       | 126 | 54              | 58              | 41                     |
|                                       | JUN-30          | 36                                                         | 41              | 45                                       | 123 | 49              | 54              | 37                     |
| SALMON FALLS CREEK nr San Jacinto     | APR-JUN         | 40                                                         | 51              | 60                                       | 81  | 69              | 85              | 74                     |
|                                       | APR-JUL         | 41                                                         | 54              | 64                                       | 80  | 74              | 90              | 79                     |
|                                       | APR-SEP         | 44                                                         | 57              | 67                                       | 80  | 78              | 94              | 84                     |
| SALMON FALLS RESV STORAGE             | APR-30          | 102                                                        | 106             | 109                                      | 132 | 112             | 116             | 83                     |
|                                       | MAY-31          | 95                                                         | 103             | 109                                      | 117 | 114             | 123             | 93                     |
|                                       | JUN-30          | 61                                                         | 74              | 83                                       | 93  | 91              | 104             | 89                     |
| BRUNEAU near Hot Springs              | APR-JUL         | 275                                                        | 329             | 368                                      | 176 | 409             | 474             | 209                    |
|                                       | APR-SEP         | 112                                                        | 148             | 175                                      | 79  | 204             | 252             | 221                    |
| OWYHEE near Gold Creek (2)            | APR-JUL         | 10.2                                                       | 15.6            | 20                                       | 80  | 25              | 33              | 25                     |
| OWYHEE nr Owyhee (2)                  | APR-JUL         | 38                                                         | 58              | 72                                       | 84  | 86              | 106             | 86                     |
| OWYHEE near Rome                      | APR-JUL         | 360                                                        | 446             | 509                                      | 135 | 577             | 684             | 377                    |
| OWYHEE RESV INFLOW (2)                | APR-JUL         | 350                                                        | 428             | 485                                      | 124 | 546             | 642             | 390                    |
| SUCCOR CK nr Jordan Valley            | APR-JUL         | 9.19                                                       | 12.99           | 15.57                                    | 162 | 18.15           | 21.95           | 9.60                   |
| SNAKE RIVER at King Hill (1,2)        | APR-JUL         |                                                            |                 | 3210                                     | 111 |                 |                 | 2896                   |
| SNAKE RIVER near Murphy (1,2)         | APR-JUL         |                                                            |                 | 3300                                     | 111 |                 |                 | 2980                   |
| SNAKE RIVER at Weiser (1,2)           | APR-JUL         |                                                            |                 | 6950                                     | 127 |                 |                 | 5465                   |
| SNAKE RIVER at Hells Canyon Dam (1,2) | APR-JUL         |                                                            |                 | 7740                                     | 126 |                 |                 | 6129                   |
| SNAKE blw Lower Granite Dam (1,2)     | APR-JUL         | 21284                                                      | 24665           | 26200                                    | 121 | 27735           | 31116           | 21650                  |

| SOUTHSIDE SNAKE RIVER BASINS<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |       | SOUTHSIDE SNAKE RIVER BASINS<br>Watershed Snowpack Analysis - April 1, 1999 |                      |                   |         |
|----------------------------------------------------------------------------|-----------------|------------------------|-----------|-------|-----------------------------------------------------------------------------|----------------------|-------------------|---------|
| Reservoir                                                                  | Usable Capacity | *** Usable Storage *** |           |       | Watershed                                                                   | Number of Data Sites | This Year as % of |         |
|                                                                            |                 | This Year              | Last Year | Avg   |                                                                             |                      | Last Yr           | Average |
| OAKLEY                                                                     | 74.5            | 48.2                   | 46.8      | 33.0  | Raft River                                                                  | 5                    | 73                | 87      |
| SALMON FALLS                                                               | 182.6           | 88.4                   | 83.6      | 63.8  | Goose-Trapper Creeks                                                        | 6                    | 82                | 89      |
| WILDHORSE RESERVOIR                                                        | 71.5            | 62.5                   | 61.1      | 38.2  | Salmon Falls Creek                                                          | 7                    | 101               | 87      |
| OWYHEE                                                                     | 715.0           | 643.9                  | 558.9     | 579.0 | Bruneau River                                                               | 8                    | 97                | 86      |
| BROWNLEE                                                                   | 1419.3          | 665.6                  | 1242.8    | 930.0 | Owyhee Basin Total                                                          | 20                   | 130               | 111     |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

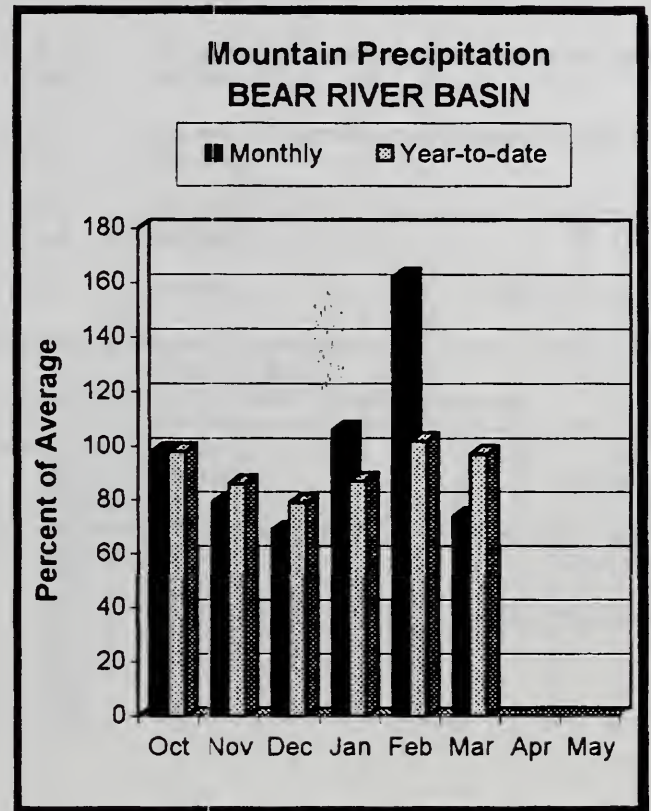
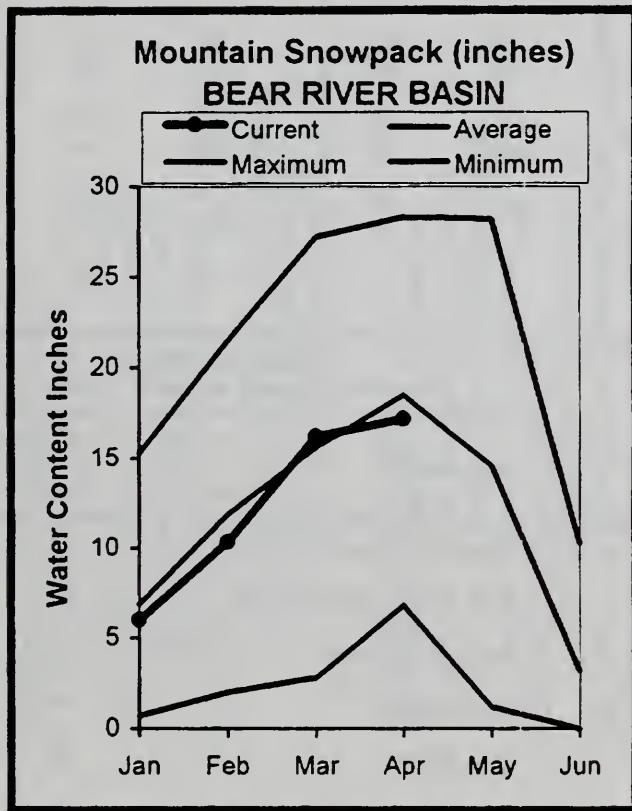
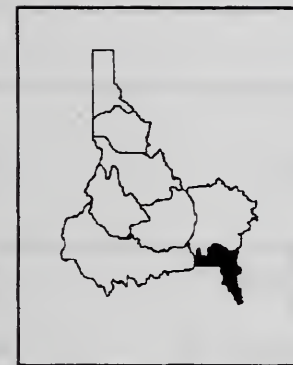
The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

# BEAR RIVER BASIN

## APRIL 1, 1999



## WATER SUPPLY OUTLOOK

March precipitation was well below normal at 74% of average. Water year to date precipitation is just below normal at 97% of average. As a result of the below normal precipitation last month, snowpack percentages decreased slightly and now range from 90-105% of average. Oxford Springs SNOTEL site, located about 10 miles northeast of Malad at 6,740 feet, is the only SNOTEL site in the region to show significant melting. All other SNOTEL sites increased slightly last month. Bear Lake was drafting water to maintain adequate flood control space and is now 77% full. Montpelier Creek Reservoir is 68% full. With good reservoir storage and streamflow forecasts that are projected at 75-95% of average, water supplies will be adequate for the many users in this region.

BEAR RIVER BASIN  
Streamflow Forecasts - April 1, 1999

| Forecast Point                       | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |                 |                                 |          |                 |                 | 30-Yr Avg.<br>(1000AF) |
|--------------------------------------|-----------------|------------------------------------------------------------|-----------------|---------------------------------|----------|-----------------|-----------------|------------------------|
|                                      |                 | =====                                                      |                 | Chance Of Exceeding *           |          | =====           |                 |                        |
|                                      |                 | 90%<br>(1000AF)                                            | 70%<br>(1000AF) | 50% (Most Probable)<br>(1000AF) | (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                        |
| BEAR R nr Randolph, UT               | APR-JUL         | 29                                                         | 68              | 94                              | 80       | 120             | 159             | 118                    |
|                                      | APR-SEP         | 27                                                         | 71              | 100                             | 79       | 129             | 173             | 127                    |
| SMITHS FK nr Border, WY              | APR-JUL         | 70                                                         | 85              | 96                              | 94       | 109             | 131             | 102                    |
|                                      | APR-SEP         | 82                                                         | 98              | 110                             | 93       | 124             | 147             | 118                    |
| THOMAS FK nr WY-ID State Line (Disc. | APR-JUL         | 17.7                                                       | 24              | 29                              | 88       | 35              | 48              | 33                     |
|                                      | APR-SEP         | 19.9                                                       | 26              | 32                              | 89       | 39              | 52              | 36                     |
| BEAR R blw Stewart Dam nr Montpelier | APR-JUL         | 123                                                        | 178             | 215                             | 75       | 252             | 307             | 288                    |
|                                      | APR-SEP         | 135                                                        | 197             | 240                             | 73       | 283             | 345             | 327                    |
| MONTPELIER CK nr Montpelier (Disc)(2 | APR-JUL         | 6.8                                                        | 8.6             | 10.0                            | 82       | 11.7            | 14.6            | 12.2                   |
|                                      | APR-SEP         | 8.2                                                        | 10.2            | 11.7                            | 82       | 13.5            | 16.6            | 14.2                   |
| CUB R nr Preston                     | APR-JUL         | 31                                                         | 36              | 40                              | 85       | 44              | 49              | 47                     |

| BEAR RIVER BASIN<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |       | BEAR RIVER BASIN<br>Watershed Snowpack Analysis - April 1, 1999 |                      |                   |         |
|----------------------------------------------------------------|-----------------|------------------------|-----------|-------|-----------------------------------------------------------------|----------------------|-------------------|---------|
| Reservoir                                                      | Usable Capacity | *** Usable Storage *** |           |       | Watershed                                                       | Number of Data Sites | This Year as % of |         |
|                                                                |                 | This Year              | Last Year | Avg   |                                                                 |                      | Last Yr           | Average |
| BEAR LAKE                                                      | 1421.0          | 1095.3                 | 1078.6    | 998.0 | Smiths & Thomas Forks                                           | 4                    | 113               | 101     |
| MONTPELIER CREEK                                               | 4.0             | 2.7                    | 2.8       | 1.5   | Bear River ab WY-ID line                                        | 11                   | 107               | 95      |
|                                                                |                 |                        |           |       | Montpelier Creek                                                | 2                    | 125               | 104     |
|                                                                |                 |                        |           |       | Mink Creek                                                      | 4                    | 94                | 91      |
|                                                                |                 |                        |           |       | Cub River                                                       | 3                    | 91                | 94      |
|                                                                |                 |                        |           |       | Bear River ab ID-UT line                                        | 22                   | 101               | 94      |
|                                                                |                 |                        |           |       | Malad River                                                     | 3                    | 75                | 77      |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

**Streamflow Adjustment List For All Forecasts Published In Idaho Basin Outlook Report** Streamflow forecasts are projections of runoff volumes that would have occurred naturally without influences from upstream reservoirs or diversions. To make these adjustments, changes in reservoir storage, diversions, and inter-basin transfers are added or subtracted from the observed (actual) streamflow volumes. The following list documents the adjustments made to each forecast point in this report. (Revised October 1998)

#### Panhandle River Basins

KOOTENAI R AT LEONIA, ID  
 + LAKE KOOCANUSA (STORAGE CHANGE)  
 CLARK FORK AT WHITEHORSE RAPIDS, ID  
 + HUNGRY HORSE (STORAGE CHANGE)  
 + FLATHEAD LAKE (STORAGE CHANGE)  
 + NOXON RAPIDS RESV (STORAGE CHANGE)  
 PEND OREILLE LAKE INFLOW, ID  
 + PEND OREILLE R AT NEWPORT, WA  
 + HUNGRY HORSE (STORAGE CHANGE)  
 + FLATHEAD LAKE (STORAGE CHANGE)  
 + NOXON RAPIDS (STORAGE CHANGE)  
 + PEND OREILLE LAKE (STORAGE CHANGE)  
 PRIEST R NR PRIEST R, ID  
 + PRIEST LAKE (STORAGE CHANGE)  
 COEUR D'ALENE R AT ENAVILLE, ID - No Corrections  
 ST. JOE R AT CALDER, ID - No Corrections  
 SPOKANE R NR POST FALLS, ID  
 + COEUR D'ALENE LAKE (STORAGE CHANGE)  
 SPOKANE R AT LONG LAKE, WA  
 + COEUR D'ALENE LAKE (STORAGE CHANGE)  
 + LONG LAKE, WA (STORAGE CHANGE)  
Clearwater River Basin  
 DWORSHAK RESERVOIR INFLOW, ID  
 + DWORSHAK RESV (STORAGE CHANGE)  
 - CLEARWATER R AT OROFINO, ID  
 + CLEARWATER R NR PECK, ID  
 CLEARWATER R AT OROFINO, ID - No Corrections  
 CLEARWATER R AT SPALDING, ID  
 + DWORSHAK RESV (STORAGE CHANGE)  
Salmon River Basin  
 SALMON R AT SALMON, ID - No Corrections  
 SALMON R AT WHITE BIRD, ID - No Corrections  
Weiser, Payette, Boise River Basins  
 WEISER R NR WEISER, ID - No Corrections  
 SF PAYETTE R AT LOWMAN, ID - No Corrections  
 DEADWOOD RESERVOIR INFLOW, ID  
 + DEADWOOD R BLW DEADWOOD RESV NR LOWMAN  
 + DEADWOOD RESV (STORAGE CHANGE)  
 NF PAYETTE R AT CASCADE, ID  
 + CASCADE RESV (STORAGE CHANGE)  
 NF PAYETTE R NR BANKS, ID  
 + CASCADE RESV (STORAGE CHANGE)

PAYETTE R NR HORSESHOE BEND, ID  
 + DEADWOOD RESV (STORAGE CHANGE)  
 + CASCADE RESV (STORAGE CHANGE)  
 BOISE R NR TWIN SPRINGS, ID - No Corrections  
 SF BOISE R AT ANDERSON RANCH DAM, ID  
 + ANDERSON RANCH RESV (STORAGE CHANGE)  
 BOISE R NR BOISE, ID  
 + ANDERSON RANCH RESV (STORAGE CHANGE)  
 + ARROWROCK RESV (STORAGE CHANGE)  
 + LUCKY PEAK RESV (STORAGE CHANGE)

#### Wood and Lost River Basins

BIG WOOD R AT HAILEY, ID - No Corrections  
 BIG WOOD R NR BELLEVUE, ID - No Corrections  
 BIG WOOD R BLW MAGIC DAM NR RICHFIELD, ID  
 + MAGIC RESV (STORAGE CHANGE)  
 LITTLE WOOD R NR CAREY, ID  
 + LITTLE WOOD RESV (STORAGE CHANGE)  
 BIG LOST R AT HOWELL RANCH NR CHILLY, ID - No Corrections  
 BIG LOST R BLW MACKAY RESV NR MACKAY, ID  
 + MACKAY RESV (STORAGE CHANGE)  
 LITTLE LOST R BLW WET CK NR HOWE, ID - No Corrections  
 LITTLE LOST R NR HOWE, ID - No Corrections (Disc)

#### Upper Snake River Basin

HENRYS FORK NR ASHTON, ID  
 + HENRYS LAKE (STORAGE CHANGE)  
 + ISLAND PARK RESV (STORAGE CHANGE)  
 HENRYS FORK NR REXBURG, ID  
 + HENRYS LAKE (STORAGE CHANGE)  
 + ISLAND PARK RESV (STORAGE CHANGE)  
 + DIV FM HENRYS FK BTW ASHTON & ST. ANTHONY, ID  
 + DIV FM HENRYS FK BTW ST. ANTHONY & REXBURG, ID  
 + GRASSY LAKE (STORAGE CHANGE)  
 FALLS R ABV YELLOWSTONE CANAL NR SQUIRREL, ID  
 + GRASSY LAKE (STORAGE CHANGE)  
 TETON R ABV SO LEIGH CK NR DRIGGS, ID - No Corrections  
 TETON R NR ST. ANTHONY, ID  
 - CROSS CUT CANAL  
 + SUM OF DIVERSIONS ABV GAGE  
 SNAKE R NR MORAN, WY  
 + JACKSON LAKE (STORAGE CHANGE)  
 PALISADES RESERVOIR INFLOW, ID  
 + SNAKE R NR IRWIN, ID  
 + JACKSON LAKE (STORAGE CHANGE)  
 + PALISADES RESV (STORAGE CHANGE)  
 SNAKE R NR HEISE, ID

+ JACKSON LAKE (STORAGE CHANGE)  
 + PALISADES RESV (STORAGE CHANGE)  
 SNAKE R NR BLACKFOOT, ID  
 + PALISADES RESV (STORAGE CHANGE)  
 + JACKSON LAKE (STORAGE CHANGE)  
 + DIV FM SNAKE R BTW HEISE AND SHELLY GAGES  
 + DIV FM SNAKE R BTW SHELLY AND BLACKFT, ID  
 PORTNEUF R AT TOPAZ, ID - No Corrections  
 AMERICAN FALLS RESERVOIR INFLOW, ID  
 + ALL CORRECT MADE FOR HENRYS FK NR REXBURG, ID  
 + JACKSON LAKE (STORAGE CHANGE)  
 + PALISADES RESV (STORAGE CHANGE)  
 + DIV FM SNAKE R BTW HEISE AND SHELLY GAGES  
 + DIV FM SNAKE R BTW SHELLY AND BLACKFT GAGES  
  
Southside Snake River Basins  
 OAKLEY RESERVOIR INFLOW, ID  
 + GOOSE CK ABV TRAPPER CK NR OAKLEY, ID  
 + TRAPPER CK NR OAKLEY, ID  
 SALMON FALLS CK NR SAN JACINTO, NV - No Corrections  
 BRUNEAU R NR HOT SPRINGS, ID - No Corrections  
 OWYHEE R NR GOLD CK, NV  
 + WILDHORSE RESV (STORAGE CHANGE)  
 OWYHEE R NR OWYHEE, NV  
 + WILDHORSE RESV (STORAGE CHANGE)  
 OWYHEE R NR ROME, OR  
 + WILDHORSE RESV (STORAGE CHANGE)  
 + JORDAN VALLEY RESV (STORAGE CHANGE)  
 OWYHEE RESERVOIR INFLOW, OR  
 + OWYHEE R BLW OWYHEE DAM, OR  
 + OWYHEE RESV (STORAGE CHANGE)  
 + DIV TO NORTH AND SOUTH CANALS  
 SUCCOR CK NR JORDAN VALLEY, OR - No Corrections  
 SNAKE R - KING HILL, ID - No Corrections  
 SNAKE R NR MURPHY, ID - No Corrections  
 SNAKE R AT WEISER, ID - No Corrections  
 SNAKE R AT HELLS CANYON DAM, ID  
 + BROWNLEE RESV (STORAGE CHANGE)  
  
Bear River Basin  
 BEAR R NR RANDOLPH, UT  
 + SULPHUR CK RESV (STORAGE CHANGE)  
 + CHAPMAN CANAL DIVERSION  
 + WOODRUFF NARROWS RESV (STORAGE CHANGE)  
 SMITHS FORK NR BORDER, WY - No Corrections  
 THOMAS FORK NR WY-ID STATELINE - No Corrections (Disc)  
 BEAR R BLW STEWART DAM, ID  
 + SULPHUR CK RESV (STORAGE CHANGE)  
 + CHAPMAN CANAL DIVERSION  
 + WOODRUFF NARROWS RESV (STORAGE CHANGE)  
 + DINGLE INLET CANAL  
 + RAINBOW INLET CANAL

+ MONTPELIER CK RESV (STORAGE CHANGE)  
 CUB R NR PRESTON, ID - No Corrections

RESERVOIR CAPACITY DEFINITIONS (Units in 1,000 acre-feet, KAF) (Revised October 1998)  
 Different agencies use various definitions when reporting reservoir capacity and contents. Reservoir storage terms include dead, inactive, active, and surcharge storage. The table below lists these volumes for each reservoir in this report, and defines the storage volumes that NRCS uses when reporting capacity and current reservoir storage. In most cases, NRCS reports usable storage, which includes active and inactive storage.

| BASIN/<br>RESERVOIR                | DEAD<br>STORAGE | INACTIVE<br>STORAGE | ACTIVE<br>STORAGE | SURCHARGE<br>STORAGE | NRCS<br>CAPACITY | NRCS CAPACITY<br>INCLUDES |
|------------------------------------|-----------------|---------------------|-------------------|----------------------|------------------|---------------------------|
| <u>PANHANDLE REGION</u>            |                 |                     |                   |                      |                  |                           |
| HUNGRY HORSE                       | 39.73           | --                  | 3451.00           | --                   | 3451.0           | ACTIVE                    |
| FLATHEAD LAKE                      | Unknown         | --                  | 1791.00           | --                   | 1971.0           | ACTIVE                    |
| NOXON RAPIDS                       | Unknown         | --                  | 335.00            | --                   | 335.0            | ACTIVE                    |
| PEND OREILLE                       | 406.20          | 112.40              | 1042.70           | --                   | 1561.3           | DEAD+INACTIVE+ACTIVE      |
| COEUR D'ALENE                      | --              | 13.50               | 225.00            | --                   | 238.5            | INACTIVE+ACTIVE           |
| PRIEST LAKE                        | 20.00           | 28.00               | 71.30             | --                   | 119.3            | DEAD+INACTIVE+ACTIVE      |
| <u>CLEARWATER BASIN</u>            |                 |                     |                   |                      |                  |                           |
| DWORSKAK                           | --              | 1452.00             | 2016.00           | --                   | 3468.0           | INACTIVE+ACTIVE           |
| <u>WEISER/BOISE/PAYETTE BASINS</u> |                 |                     |                   |                      |                  |                           |
| MANN CREEK                         | 1.61            | 0.24                | 11.10             | --                   | 11.1             | ACTIVE                    |
| CASCADE                            | --              | 50.00               | 653.20            | --                   | 703.2            | INACTIVE+ACTIVE           |
| DEADWOOD                           | 1.50            | --                  | 161.90            | --                   | 161.9            | ACTIVE                    |
| ANDERSON RANCH                     | 29.00           | 41.00               | 423.18            | --                   | 464.2            | INACTIVE+ACTIVE           |
| ARROWROCK                          | --              | --                  | 286.60            | --                   | 286.6            | ACTIVE                    |
| LUCKY PEAK                         | --              | 28.80               | 264.40            | 13.80                | 293.2            | INACTIVE+ACTIVE           |
| LAKE LOWELL                        | --              | 8.00                | 169.10            | --                   | 177.1            | INACTIVE+ACTIVE           |
| <u>WOOD/LOST BASINS</u>            |                 |                     |                   |                      |                  |                           |
| MAGIC                              | --              | --                  | 191.50            | --                   | 191.5            | ACTIVE                    |
| LITTLE WOOD                        | --              | --                  | 30.00             | --                   | 30.0             | ACTIVE                    |
| MACKAY                             | 0.13            | --                  | 44.37             | --                   | 44.4             | ACTIVE                    |
| <u>UPPER SNAKE BASIN</u>           |                 |                     |                   |                      |                  |                           |
| HENRYS LAKE                        | --              | --                  | 90.40             | --                   | 90.4             | ACTIVE                    |
| ISLAND PARK                        | 0.40            | --                  | 127.30            | 7.90                 | 135.2            | ACTIVE+SURCHARGE          |
| GRASSY LAKE                        | --              | --                  | 15.18             | --                   | 15.2             | ACTIVE                    |
| JACKSON LAKE                       | --              | --                  | 847.00            | --                   | 847.0            | ACTIVE                    |
| PALISADES                          | 44.10           | 155.50              | 1200.00           | --                   | 1400.0           | DEAD+INACTIVE+ACTIVE      |
| RIRIE                              | 4.00            | 6.00                | 80.54             | 10.00                | 80.5             | ACTIVE                    |
| BLACKFOOT                          | --              | --                  | 348.73            | --                   | 348.7            | ACTIVE                    |
| AMERICAN FALLS                     | --              | --                  | 1672.60           | --                   | 1672.6           | ACTIVE                    |
| <u>SOUTHSIDE SNAKE BASINS</u>      |                 |                     |                   |                      |                  |                           |
| OAKLEY                             | --              | --                  | 74.50             | --                   | 74.5             | ACTIVE                    |
| SALMON FALLS                       | 48.00           | --                  | 182.65            | --                   | 182.6            | ACTIVE                    |
| WILDHORSE                          | --              | --                  | 71.50             | --                   | 71.5             | ACTIVE                    |
| OWYHEE                             | 406.83          | --                  | 715.00            | --                   | 715.0            | ACTIVE                    |
| BROWNLEE                           | 0.45            | 444.00              | 975.30            | --                   | 1419.3           | INACTIVE+ACTIVE           |
| <u>BEAR RIVER BASIN</u>            |                 |                     |                   |                      |                  |                           |
| WOODRUFF NARROWS                   | --              | 1.50                | 57.30             | --                   | 57.3             | ACTIVE                    |
| WOODRUFF CREEK                     | --              | 4.00                | 4.00              | --                   | 4.0              | ACTIVE                    |
| BEAR LAKE                          | --              | --                  | 1421.00           | --                   | 1421.0           | ACTIVE                    |
| MONTPELIER CREEK                   | 0.21            | --                  | 3.84              | --                   | 4.0              | DEAD+ACTIVE               |

# Interpreting Streamflow Forecasts

## Introduction

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

**Most Probable (50 Percent Chance of Exceeding) Forecast.** This forecast is the best estimate of streamflow volume that can be produced given current conditions and based on the outcome of similar past situations. There is a 50 percent chance that the streamflow volume will exceed this forecast value. There is a 50 percent chance that the streamflow volume will be less than this forecast value.

The most probable forecast will rarely be exactly right, due to errors resulting from future weather conditions and the forecast equation itself. This does not mean that users should not use the most probable forecast; it means that they need to evaluate existing circumstances and determine the amount of risk they are willing to take by accepting this forecast value.

## To Decrease the Chance of Having Too little Water

If users want to make sure there is enough water available for their operations, they might determine that a 50 percent chance of the streamflow volume being lower than the most probable forecast is too much risk to take. To reduce the risk of not having enough water available during the forecast period, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded (or possibly some point in-between). These include:

**70 Percent Chance of Exceeding Forecast.** There is a 70 percent chance that the streamflow volume will exceed this forecast value.

There is a 30 percent chance the streamflow volume will be less than this forecast value.

**90 Percent Chance of Exceeding Forecast.** There is a 90 percent chance that the streamflow volume will exceed this forecast value.

There is a 10 percent chance the streamflow volume will be less than this forecast value.

## To Decrease the Chance of Having Too much Water

If users want to make sure they don't have too much water, they might determine that a 50 percent chance of the streamflow being higher than the most probable forecast is too much of a risk to take. To reduce the risk

of having too much water available during the forecast period, users can base their operational decisions on one of the forecasts with a smaller chance of being exceeded. These include:

**30 Percent Chance of Exceeding Forecast.** There is a 30 percent chance that the streamflow volume will exceed this forecast value. There is a 70 percent chance the streamflow volume will be less than this forecast value.

**10 Percent Chance of Exceeding Forecast.** There is a 10 percent chance that the streamflow volume will exceed this forecast value. There is a 90 percent chance the streamflow volume will be less than this forecast value.

## Using the forecasts - an example

**Using the Most Probable Forecast.** Using the example forecasts shown below, users can reasonably expect 36,000 acre-feet to flow past the gaging station on the Mary's River near Death between March 1 and July 31.

**Using the Higher Exceedance Forecasts.** If users anticipate a somewhat drier trend in the future (monthly and seasonal weather outlooks are available from the National Weather Service every two weeks), or if they are operating at a level where an unexpected shortage of water could cause problems, they might want to plan on receiving only 20,000 acre-feet (from the 70 percent chance of exceeding forecast). In seven out of ten years with similar conditions, streamflow volumes will exceed the 20,000 acre-foot forecast.

If users anticipate extremely dry conditions for the remainder of the season, or if they determine the risk of using the 70 percent chance of exceeding forecast is too great, then they might plan on receiving only 5000 acre-feet (from the 90 percent chance of exceeding forecast). Nine out of ten years with similar conditions, streamflow volumes will exceed the 5000 acre-foot forecast.

**Using the Lower Exceedance Forecasts.** If users expect wetter future conditions, or if the chance that five out of every ten years with similar conditions would produce streamflow volumes greater than 36,000 acre-feet was more than they would like to risk, they might plan on receiving 52,000 acre-feet (from the 30 percent chance of exceeding forecast) to minimize potential flooding problems. Three out of ten years with similar conditions, streamflows will exceed the 52,000 acre-foot forecast.

In years when users expect extremely wet conditions for the remainder of the season and the threat of severe flooding and downstream damage exists, they might choose to use the 76,000 acre-foot (10 percent chance of exceeding) forecast for their water management operations. Streamflow volumes will exceed this level only one year out of ten.

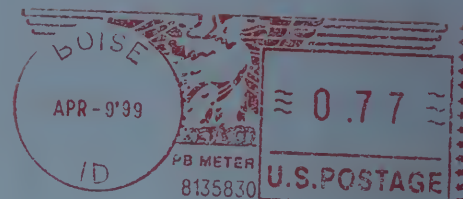
WEISER, PAYETTE, BOISE RIVER BASINS  
Streamflow Forecasts

| Forecast Point                    | Forecast Period | Future Conditions |              |                              |              |              | 30-Yr Avg. (1000AF) |
|-----------------------------------|-----------------|-------------------|--------------|------------------------------|--------------|--------------|---------------------|
|                                   |                 | 90% (1000AF)      | 70% (1000AF) | 50% (Most Probable) (1000AF) | 30% (1000AF) | 10% (1000AF) |                     |
| SF PAYETTE RIVER at Lowman        | APR-JUL         | 329               | 414          | 471                          | 528          | 613          | 432                 |
|                                   | APR-SEP         | 369               | 459          | 521                          | 583          | 673          | 488                 |
| BOISE RIVER near Twin Springs (1) | APR-JUL         | 443               | 610          | 685                          | 760          | 927          | 631                 |
|                                   | APR-SEP         | 495               | 670          | 750                          | 830          | 1005         |                     |

For more information concerning streamflow forecasting ask your local NRCS field office for a copy of "A Field Office Guide for Interpreting Streamflow Forecasts".



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